



CALL NO. 104

CONTRACT ID. 191045

MARSHALL COUNTY

FED/STATE PROJECT NUMBER NHPP 0411 (037)

DESCRIPTION MAIN ST.AND POPLAR ST.(US-641)

WORK TYPE ASPHALT PAVEMENT & ROADWAY REHAB

PRIMARY COMPLETION DATE 11/30/2020

LETTING DATE: September 20,2019

Sealed Bids will be received electronically through the Bid Express bidding service until 10:00 AM EASTERN DAYLIGHT TIME September 20,2019. Bids will be publicly announced at 10:00 AM EASTERN DAYLIGHT TIME.

PLANS AVAILABLE FOR THIS PROJECT.

DBE CERTIFICATION REQUIRED - 6%

REQUIRED BID PROPOSAL GUARANTY: Not less than 5% of the total bid.

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PART I
SCOPE OF WORK

ADMINISTRATIVE DISTRICT - 01

CONTRACT ID - 191045

NHPP 0411 (037)

COUNTY - MARSHALL

PCN - DE07906411945

NHPP 0411 (037)

MAIN ST.AND POPLAR ST.(US-641) (MP 7.981) ADDRESS PAVEMENT CONDITIONS OF AC PAVEMENT (MP 8.824), A DISTANCE OF 0.84 MILES.ASPHALT PAVEMENT & ROADWAY REHAB SYP NO. 01-20016.00.
GEOGRAPHIC COORDINATES LATITUDE 36:51:27.00 LONGITUDE 88:21:02.00

COMPLETION DATE(S):

COMPLETED BY 11/30/2020

APPLIES TO ENTIRE CONTRACT

CONTRACT NOTES

PROPOSAL ADDENDA

All addenda to this proposal must be applied when calculating bid and certified in the bid packet submitted to the Kentucky Department of Highways. Failure to use the correct and most recent addenda may result in the bid being rejected.

BID SUBMITTAL

Bidder must use the Department's electronic bidding software. The Bidder must download the bid file located on the Bid Express website (www.bidx.com) to prepare a bid packet for submission to the Department. The bidder must submit electronically using Bid Express.

JOINT VENTURE BIDDING

Joint venture bidding is permissible. All companies in the joint venture must be prequalified in one of the work types in the Qualifications for Bidders for the project. The bidders must get a vendor ID for the joint venture from the Division of Construction Procurement and register the joint venture as a bidder on the project. Also, the joint venture must obtain a digital ID from Bid Express to submit a bid. A joint bid bond of 5% may be submitted for both companies or each company may submit a separate bond of 5%.

UNDERGROUND FACILITY DAMAGE PROTECTION

The contractor shall make every effort to protect underground facilities from damage as prescribed in the Underground Facility Damage Protection Act of 1994, Kentucky Revised Statute KRS 367.4901 to 367.4917. It is the contractor's responsibility to determine and take steps necessary to be in compliance with federal and state damage prevention directives. When prescribed in said directives, the contractor shall submit Excavation Locate Requests to the Kentucky Contact Center (KY811) via web ticket entry. The submission of this request does not relieve the contractor from the responsibility of contacting non-member facility owners, whom shall be contacted through their individual Protection Notification Center. Non-compliance with these directives can result in the enforcement of penalties.

REGISTRATION WITH THE SECRETARY OF STATE BY A FOREIGN ENTITY

Pursuant to KRS 176.085(1)(b), an agency, department, office, or political subdivision of the Commonwealth of Kentucky shall not award a state contract to a person that is a foreign entity required by [KRS 14A.9-010](#) to obtain a certificate of authority to transact business in the Commonwealth ("certificate") from the Secretary of State under [KRS 14A.9-030](#) unless the person produces the certificate within fourteen (14) days of the bid or proposal opening. If the foreign entity is not required to obtain a certificate as provided in [KRS 14A.9-010](#), the foreign entity should identify the applicable exception. Foreign entity is defined within [KRS 14A.1-070](#).

For all foreign entities required to obtain a certificate of authority to transact business in the Commonwealth, if a copy of the certificate is not received by the contracting agency within the time frame identified above, the foreign entity's solicitation response shall be deemed non-responsive or the awarded contract shall be cancelled.

Businesses can register with the Secretary of State at <https://secure.kentucky.gov/sos/ftbr/welcome.aspx>.

SPECIAL NOTE FOR PROJECT QUESTIONS DURING ADVERTISEMENT

Questions about projects during the advertisement should be submitted in writing to the Division of Construction Procurement. This may be done by fax (502) 564-7299 or email to kytc.projectquestions@ky.gov. The Department will attempt to answer all submitted questions. The Department reserves the right not to answer if the question is not pertinent or does not aid in clarifying the project intent.

The deadline for posting answers will be 3:00 pm Eastern Daylight Time, the day preceding the Letting. Questions may be submitted until this deadline with the understanding that the later a question is submitted, the less likely an answer will be able to be provided.

The questions and answers will be posted for each Letting under the heading "Questions & Answers" on the Construction Procurement website (www.transportation.ky.gov/contract). The answers provided shall be considered part of this Special Note and, in case of a discrepancy, will govern over all other bidding documents.

HARDWOOD REMOVAL RESTRICTIONS

The US Department of Agriculture has imposed a quarantine in Kentucky and several surrounding states, to prevent the spread of an invasive insect, the emerald ash borer. Hardwood cut in conjunction with the project may not be removed from the state. Chipping or burning on site is the preferred method of disposal.

INSTRUCTIONS FOR EXCESS MATERIAL SITES AND BORROW SITES

Identification of excess material sites and borrow sites shall be the responsibility of the Contractor. The Contractor shall be responsible for compliance with all applicable state and federal laws and may wish to consult with the US Fish and Wildlife Service to seek protection under Section 10 of the Endangered Species Act for these activities.

ACCESS TO RECORDS

The contractor, as defined in KRS 45A.030 (9) agrees that the contracting agency, the Finance and Administration Cabinet, the Auditor of Public Accounts, and the Legislative Research Commission, or their duly authorized representatives, shall have access to any books, documents, papers, records, or other evidence, which are directly pertinent to this contract for the purpose of financial audit or program review. Records and other prequalification information confidentially

disclosed as part of the bid process shall not be deemed as directly pertinent to the contract and shall be exempt from disclosure as provided in KRS 61.878(1)(c). The contractor also recognizes that any books, documents, papers, records, or other evidence, received during a financial audit or program review shall be subject to the Kentucky Open Records Act, KRS 61.870 to 61.884.

In the event of a dispute between the contractor and the contracting agency, Attorney General, or the Auditor of Public Accounts over documents that are eligible for production and review, the Finance and Administration Cabinet shall review the dispute and issue a determination, in accordance with Secretary's Order 11-004.

April 30, 2018

FEDERAL CONTRACT NOTES

The Kentucky Department of Highways, in accordance with the Regulations of the United States Department of Transportation 23 CFR 635.112 (h), hereby notifies all bidders that failure by a bidder to comply with all applicable sections of the current Kentucky Standard Specifications, including, but not limited to the following, may result in a bid not being considered responsive and thus not eligible to be considered for award:

- | | |
|--------------------------------|--|
| 102.02 Current Rating | 102.08 Preparation and Delivery of Proposals |
| 102.13 Irregular Bid Proposals | 102.14 Disqualification of Bidders |
| 102.09 Proposal Guaranty | |

CIVIL RIGHTS ACT OF 1964

The Kentucky Department of Highways, in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252) and the Regulations of the Federal Department of Transportation (49 C.F.R., Part 21), issued pursuant to such Act, hereby notifies all bidders that it will affirmatively insure that the contract entered into pursuant to this advertisement will be awarded to the lowest responsible bidder without discrimination on the ground of race, color, or national origin.

NOTICE TO ALL BIDDERS

To report bid rigging activities call: 1-800-424-9071.

The U.S. Department of Transportation (DOT) operates the above toll-free "hotline" Monday through Friday, 8:00 a.m. to 5:00 p.m. eastern time. Anyone with knowledge of possible bid rigging, bidder collusion, or other fraudulent activities should use the "hotline" to report such activities.

The "hotline" is part of the DOT's continuing effort to identify and investigate highway construction contract fraud and abuse and is operated under the direction of the DOT Inspector General. All information will be treated confidentially and caller anonymity will be respected.

SECOND TIER SUBCONTRACTS

Second Tier subcontracts on federally assisted projects shall be permitted. However, in the case of DBE's, second tier subcontracts will only be permitted where the other subcontractor is also a DBE. All second tier subcontracts shall have the consent of both the Contractor and the Engineer.

DISADVANTAGED BUSINESS ENTERPRISE PROGRAM

It is the policy of the Kentucky Transportation Cabinet (“the Cabinet”) that Disadvantaged Business Enterprises (“DBE”) shall have the opportunity to participate in the performance of highway construction projects financed in whole or in part by Federal Funds in order to create a level playing field for all businesses who wish to contract with the Cabinet. To that end, the Cabinet will comply with the regulations found in 49 CFR Part 26, and the definitions and requirements contained therein shall be adopted as if set out verbatim herein.

The Cabinet, contractors, subcontractors, and sub-recipients shall not discriminate on the basis of race, color, national origin, or sex in the performance of work performed pursuant to Cabinet contracts. The contractor shall carry out applicable requirements of 49 CFR 26 in the award and administration of federally assisted highway construction projects. The contractor will include this provision in all its subcontracts and supply agreements pertaining to contracts with the Cabinet.

Failure by the contractor to carry out these requirements is a material breach of its contract with the Cabinet, which may result in the termination of the contract or such other remedy as the Cabinet deems necessary.

DBE GOAL

The Disadvantaged Business Enterprise (DBE) goal established for this contract, as listed on the front page of the proposal, is the percentage of the total value of the contract.

The contractor shall exercise all necessary and reasonable steps to ensure that Disadvantaged Business Enterprises participate in a least the percent of the contract as set forth above as goals for this contract.

OBLIGATION OF CONTRACTORS

Each contractor prequalified to perform work on Cabinet projects shall designate and make known to the Cabinet a liaison officer who is assigned the responsibility of effectively administering and promoting an active program for utilization of DBEs.

If a formal goal has not been designated for the contract, all contractors are encouraged to consider DBEs for subcontract work as well as for the supply of material and services needed to perform this work.

Contractors are encouraged to use the services of banks owned and controlled by minorities and women.

CERTIFICATION OF CONTRACT GOAL

Contractors shall include the following certification in bids for projects for which a DBE goal has been established. BIDS SUBMITTED WHICH DO NOT INCLUDE CERTIFICATION OF DBE PARTICIPATION WILL NOT BE ACCEPTED. These bids will not be considered for award by the Cabinet and they will be returned to the bidder.

“The bidder certifies that it has secured participation by Disadvantaged Business Enterprises (“DBE”) in the amount of _____ percent of the total value of this contract and that the DBE participation is in compliance with the requirements of 49 CFR 26 and the policies of the Kentucky Transportation Cabinet pertaining to the DBE Program.”

The certification statement is located in the electronic bid file. All contractors must certify their DBE participation on that page. DBEs utilized in achieving the DBE goal must be certified and prequalified for the work items at the time the bid is submitted.

DBE PARTICIPATION PLAN

Lowest responsive bidders must submit the *DBE Plan/ Subcontractor Request*, form TC 14-35 DBE, within **5** days of the letting. This is necessary before the Awards Committee will review and make a recommendation. **The project will not be considered for award prior to submission and approval of the apparent low bidder’s DBE Plan/Subcontractor Request.**

The DBE Participation Plan shall include the following:

1. Name and address of DBE Subcontractor(s) and/or supplier(s) intended to be used in the proposed project;
2. Description of the work each is to perform including the work item, unit, quantity, unit price and total amount of the work to be performed by the individual DBE. The Proposal Line Number, Category Number, and the Project Line Number can be found in the “material listing” on the Construction Procurement website under the specific letting;
3. The dollar value of each proposed DBE subcontract and the percentage of total project contract value this represents. DBE participation may be counted as follows:
 - a. If DBE suppliers and manufactures assume actual and contractual responsibility, the dollar value of materials to be furnished will be counted toward the goal as follows:
 - The entire expenditure paid to a DBE manufacturer;
 - 60 percent of expenditures to DBE suppliers that are not manufacturers provided the supplier is a regular dealer in the product involved. A regular dealer must be engaged in, as its principal business and in its own name, the sale of products to the public, maintain an inventory and own and operate distribution equipment; and
 - The amount of fees or commissions charged by the DBE firms for a bona fide service, such as professional, technical, consultant, or managerial services and assistance in the procurement of essential personnel, facilities, equipment, materials, supplies, delivery of materials and supplies or for furnishing bonds, or insurance, providing such fees or commissions are determined to be reasonable and customary.

- b) The dollar value of services provided by DBEs such as quality control testing, equipment repair and maintenance, engineering, staking, etc.;
 - c) The dollar value of joint ventures. DBE credit for joint ventures will be limited to the dollar amount of the work actually performed by the DBE in the joint venture;
4. Written and signed documentation of the bidder's commitment to use a DBE contractor whose participation is being utilized to meet the DBE goal; and
 5. Written and signed confirmation from the DBE that it is participating in the contract as provided in the prime contractor's commitment.

UPON AWARD AND BEFORE A WORK ORDER WILL BE ISSUED

Contractors must submit the signed subcontract between the contractor and the DBE contractor, along with the DBE's certificate of insurance. If the DBE is a supplier of materials for the project, a signed purchase order must be submitted to the Division of Construction Procurement.

Changes to DBE Participation Plans must be approved by the Cabinet. The Cabinet may consider extenuating circumstances including, but not limited to, changes in the nature or scope of the project, the inability or unwillingness of a DBE to perform the work in accordance with the bid, and/or other circumstances beyond the control of the prime contractor.

CONSIDERATION OF GOOD FAITH EFFORTS REQUESTS

If the DBE participation submitted in the bid by the apparent lowest responsive bidder does not meet or exceed the DBE contract goal, the apparent lowest responsive bidder must submit a Good Faith Effort Package to satisfy the Cabinet that sufficient good faith efforts were made to meet the contract goals prior to submission of the bid. Efforts to increase the goal after bid submission will not be considered in justifying the good faith effort, unless the contractor can show that the proposed DBE was solicited prior to the letting date. DBEs utilized in achieving the DBE goal must be certified and prequalified for the work items at the time the bid is submitted. One complete set (hard copy along with an electronic copy) of this information must be received in the Division of Contract Procurement no later than 12:00 noon of the tenth calendar day after receipt of notification that they are the apparent low bidder.

Where the information submitted includes repetitious solicitation letters it will be acceptable to submit a sample representative letter along with a distribution list of the firms solicited. Documentation of DBE quotations shall be a part of the good faith effort submittal as necessary to demonstrate compliance with the factors listed below which the Cabinet considers in judging good faith efforts. This documentation may include written subcontractors' quotations, telephone log notations of verbal quotations, or other types of quotation documentation.

The Good Faith Effort Package shall include, but may not be limited to information showing evidence of the following:

1. Whether the bidder attended any pre-bid meetings that were scheduled by the Cabinet to inform DBEs of subcontracting opportunities;
2. Whether the bidder provided solicitations through all reasonable and available means;
3. Whether the bidder provided written notice to all DBEs listed in the DBE directory at the time of the letting who are prequalified in the areas of work that the bidder will be subcontracting;
4. Whether the bidder followed up initial solicitations of interest by contacting DBEs to determine with certainty whether they were interested. If a reasonable amount of DBEs within the targeted districts do not provide an intent to quote or no DBEs are prequalified in the subcontracted areas, the bidder must notify the Disadvantaged Enterprise Business Liaison Officer (DEBLO) in the Office of Civil Rights and Small Business Development to give notification of the bidder's inability to get DBE quotes;
5. Whether the bidder selected portions of the work to be performed by DBEs in order to increase the likelihood of meeting the contract goals. This includes, where appropriate, breaking out contract work items into economically feasible units to facilitate DBE participation, even when the prime contractor might otherwise perform these work items with its own forces;
6. Whether the bidder provided interested DBEs with adequate and timely information about the plans, specifications, and requirements of the contract;
7. Whether the bidder negotiated in good faith with interested DBEs not rejecting them as unqualified without sound reasons based on a thorough investigation of their capabilities. Any rejection should be so noted in writing with a description as to why an agreement could not be reached;
8. Whether quotations were received from interested DBE firms but were rejected as unacceptable without sound reasons why the quotations were considered unacceptable. The fact that the DBE firm's quotation for the work is not the lowest quotation received will not in itself be considered as a sound reason for rejecting the quotation as unacceptable. The fact that the bidder has the ability and/or desire to perform the contract work with its own forces will not be considered a sound reason for rejecting a DBE quote. Nothing in this provision shall be construed to require the bidder to accept unreasonable quotes in order to satisfy DBE goals;
9. Whether the bidder specifically negotiated with subcontractors to assume part of the responsibility to meet the contract DBE goal when the work to be subcontracted includes potential DBE participation;
10. Whether the bidder made any efforts and/or offered assistance to interested DBEs in obtaining the necessary equipment, supplies, materials, insurance and/or bonding to satisfy the work requirements of the bid proposal; and
11. Any other evidence that the bidder submits which may show that the bidder has made reasonable good faith efforts to include DBE participation.

FAILURE TO MEET GOOD FAITH REQUIREMENT

Where the apparent lowest responsive bidder fails to submit sufficient participation by DBE firms to meet the contract goal and upon a determination by the Good Faith Committee based upon the information submitted that the apparent lowest responsive bidder failed to make sufficient reasonable efforts to meet the contract goal, the bidder will be offered the opportunity to meet in person for administrative reconsideration. The bidder will be notified of the Committee's decision within 24 hours of its decision. The bidder will have 24 hours to request reconsideration of the Committee's decision. The reconsideration meeting will be held within two days of the receipt of a request by the bidder for reconsideration.

The request for reconsideration will be heard by the Office of the Secretary. The bidder will have the opportunity to present written documentation or argument concerning the issue of whether it met the goal or made an adequate good faith effort. The bidder will receive a written decision on the reconsideration explaining the basis for the finding that the bidder did or did not meet the goal or made adequate Good Faith efforts to do so.

The result of the reconsideration process is not administratively appealable to the Cabinet or to the United States Department of Transportation.

The Cabinet reserves the right to award the contract to the next lowest responsive bidder or to rebid the contract in the event that the contract is not awarded to the low bidder as the result of a failure to meet the good faith requirement.

SANCTIONS FOR FAILURE TO MEET DBE REQUIREMENTS OF THE PROJECT

Failure by the prime contractor to fulfill the DBE requirements of a project under contract or to demonstrate good faith efforts to meet the goal constitutes a breach of contract. When this occurs, the Cabinet will hold the prime contractor accountable, as would be the case with all other contract provisions. Therefore, the contractor's failure to carry out the DBE contract requirements shall constitute a breach of contract and as such the Cabinet reserves the right to exercise all administrative remedies at its disposal including, but not limited to the following:

- Disallow credit toward the DBE goal;
- Withholding progress payments;
- Withholding payment to the prime in an amount equal to the unmet portion of the contract goal; and/or
- Termination of the contract.

PROMPT PAYMENT

The prime contractor will be required to pay the DBE within seven (7) working days after he or she has received payment from the Kentucky Transportation Cabinet for work performed or materials furnished.

CONTRACTOR REPORTING

All contractors must keep detailed records and provide reports to the Cabinet on their progress in meeting the DBE requirement on any highway contract. These records may include, but shall not be limited to payroll, lease agreements, cancelled payroll checks, executed subcontracting agreements, etc. Prime contractors will be required to complete and submit a **signed and notarized** Affidavit of Subcontractor Payment (TC 18-7) and copies of checks for any monies paid to each DBE subcontractor or supplier utilized to meet a DBE goal. These documents must be completed and signed within 7 days of being paid by the Cabinet.

Payment information that needs to be reported includes date the payment is sent to the DBE, check number, Contract ID, amount of payment and the check date. Before Final Payment is made on this contract, the Prime Contractor will certify that all payments were made to the DBE subcontractor and/or DBE suppliers.

******* IMPORTANT *******

Please mail the original, signed and completed TC (18-7) Affidavit of Subcontractor Payment form and all copies of checks for payments listed above to the following address:

Office of Civil Rights and Small Business Development
6th Floor West 200 Mero Street
Frankfort, KY 40622

The prime contractor should notify the KYTC Office of Civil Rights and Small Business Development seven (7) days prior to DBE contractors commencing work on the project. The contact in this office is Mr. Melvin Bynes. Mr. Bynes' current contact information is email address – melvin.bynes2@ky.gov and the telephone number is (502) 564-3601.

DEFAULT OR DECERTIFICATION OF THE DBE

If the DBE subcontractor or supplier is decertified or defaults in the performance of its work, and the overall goal cannot be credited for the uncompleted work, the prime contractor may utilize a substitute DBE or elect to fulfill the DBE goal with another DBE on a different work item. If after exerting good faith effort in accordance with the Cabinet's Good Faith Effort policies and procedures, the prime contractor is unable to replace the DBE, then the unmet portion of the goal may be waived at the discretion of the Cabinet.

7/19/2019

LEGAL REQUIREMENTS AND RESPONSIBILITY TO THE PUBLIC – CARGO PREFERENCE ACT (CPA).

(REV 12-17-15) (1-16)

SECTION 7 is expanded by the following new Article:

102.10 **Cargo Preference Act – Use of United States-flag vessels.**

Pursuant to Title 46CFR Part 381, the Contractor agrees

- To utilize privately owned United States-flag commercial vessels to ship at least 50 percent of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to this contract, to the extent such vessels are available at fair and reasonable rates for United States-flag commercial vessels.

- To furnish within 20 days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, 'on-board' commercial ocean bill-of-lading in English for each shipment of cargo described in paragraph 1 of this section to both the Contracting Officer (through the prime contractor in the case of subcontractor bills-of-lading) and to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590.

- To insert the substance of the provisions of this clause in all subcontracts issued pursuant to this contract.

ASPHALT MIXTURE

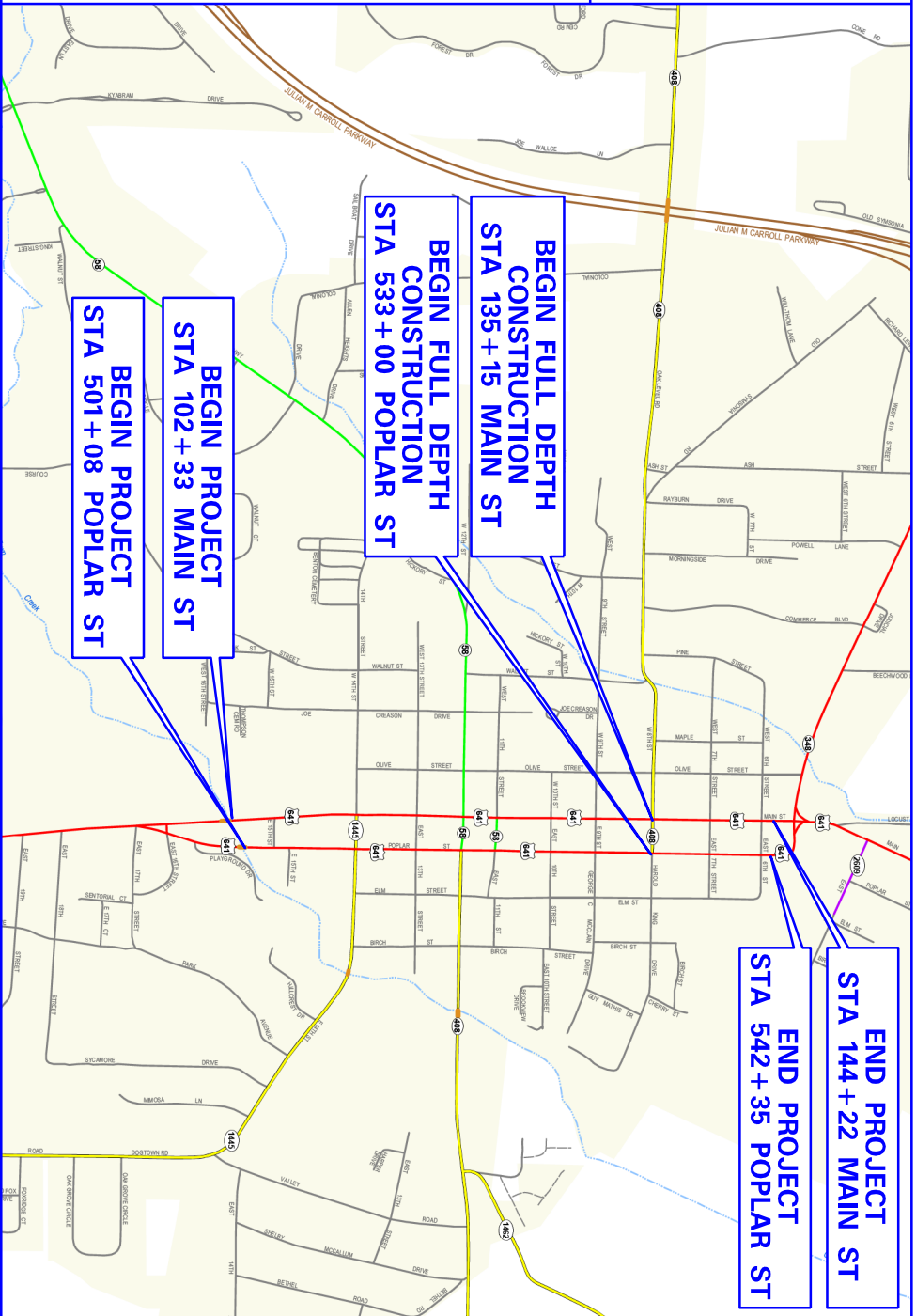
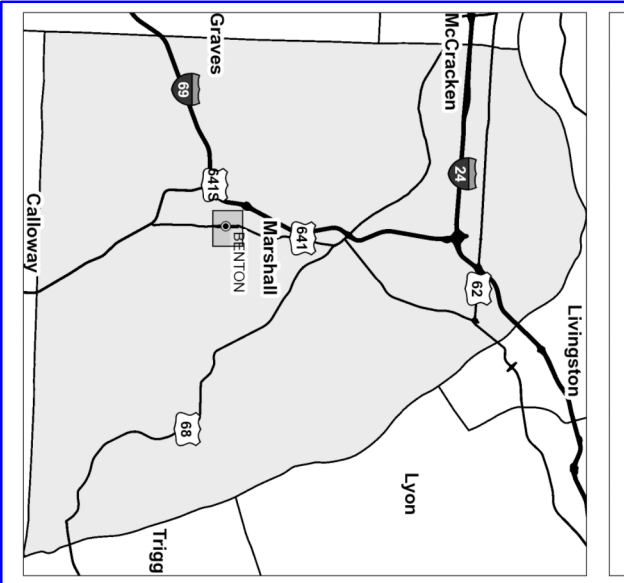
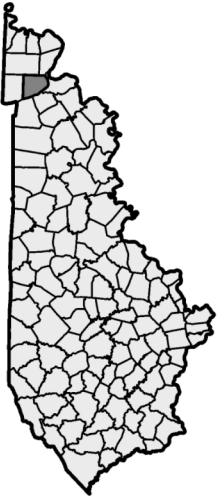
Unless otherwise noted, the Department estimates the rate of application for all asphalt mixtures to be 110 lbs/sy per inch of depth.

INCIDENTAL SURFACING

The Department has included in the quantities of asphalt mixtures established in the proposal estimated quantities required for resurfacing or surfacing mailbox turnouts, farm field entrances, residential and commercial entrances, curve widening, ramp gores and tapers, and road and street approaches, as applicable. Pave these areas to the limits as shown on Standard Drawing RPM-110-06 or as directed by the Engineer. In the event signal detectors are present in the intersecting streets or roads, pave the crossroads to the right of way limit or back of the signal detector, whichever is the farthest back of the mainline. Surface or resurface these areas as directed by the Engineer. The Department will not measure placing and compacting for separate payment but shall be incidental to the Contract unit price for the asphalt mixtures.

FUEL AND ASPHALT PAY ADJUSTMENT

The Department has included the Contract items Asphalt Adjustment and Fuel Adjustment for possible future payments at an established Contract unit price of \$1.00. The Department will calculate actual adjustment quantities after work is completed. If existing Contract amount is insufficient to pay all items on the contract with the adjustments, the Department will establish additional monies with a change order.



PROJECT NUMBER: FD52 079 0641 007-009, NHPP 0411 (037)

ITEM NUMBER: 1-20016 **LETTING DATE:** AUGUST 23, 2019

RECOMMENDED BY: ANDRE JOHANNES, P.E. **DATE:** _____
Project Manager

PLAN APPROVED BY: _____ **DATE:** _____
State Highway Engineer

FHWA APPROVED BY: _____ **DATE:** _____



1 HARRIS Circle, U.S. 460
Ft. Mitchell, TN 38001
502.495.5800

**US 641
MAIN ST. & POPLAR ST.
MARSHALL COUNTY
Item No. 01-20016.00**

MAIN ST. STA. 102+33 to STA. 144+22

POPLAR ST. STA. 501+08 to STA. 542+35

**THE CONTROL OF ACCESS ON THIS
PROJECT IS BY PERMIT**

I. DESCRIPTION

Perform all work in accordance with the Department's 2019 Standard Specifications, Supplemental Specifications, Applicable Special Provisions, and Applicable Standard and Sepia Drawings, and Special Notes except as hereafter specified. Article references are to the Standard Specifications. Furnish all materials, labor, equipment, and incidentals for the following work:

- (1) Maintain and Control Traffic; (2) Drainage structure work; (3) Asphalt Pavement Milling and Texturing; (4) Asphalt Pavement; (5) Pavement markings; and (6) All other work specified as part of this contract.

Except as otherwise specified in the project plans and proposal, furnish and install materials and perform all items of work in accordance with the Department's Standard Specifications, and Standard Drawings. Except as otherwise specified in the project plans and proposal payment for all items of work will be in accordance with Department's Standard Specifications, and Standard Drawings.

II. MATERIALS

Except as specified in these notes or on the drawings, all materials will be according to the Standard Specifications and applicable Special Provisions and Special Notes. The Department will sample and test all materials according to Department's Sampling Manual and the Contractor will have the materials available for sampling a sufficient time in advance of the use of the materials to allow for the necessary time for testing, unless otherwise specified in these notes.

- A. **Maintain and Control Traffic.** See Traffic Control Plan.
- B. **Pavement Markings -6 inch.** Use Spray Thermo Markings for permanent striping.
- C. **Pavement Markings – 12 inch and 24 inch.** Use Thermoplastic Pavement Markings 12 inches in width for all crosswalks except use longitudinal 24 inch wide markings where existing markings are longitudinal. Use Thermo yield lines in advance of cross walks where existing.

- D. **Temporary Pavement Markings** – Use temporary paint for temporary pavement markings on pavements that are intended to be overlaid. Use temporary removable tape on permanent pavements that are not intended to be overlaid.
- E. **Joint Adhesive.** See “Special Note for Longitudinal Pavement Joint Adhesive”
- F. **Fiber Reinforcement for HMA.** See Special Note for Fiber Reinforcement of HMA.

III. CONSTRUCTION METHODS

- A. **Maintain and Control Traffic.** See Traffic Control Plan and Standard Specifications.
- B. **Site Preparation.** Be responsible for all site preparation. Do not disturb existing signs. This item will include, but is not limited to, removal of brush and vegetation, incidental excavation and backfilling; removal of all obstructions or any other items, disposal of materials, sweeping and removal of debris, shoulder preparation and restoration, temporary and permanent erosion and pollution control, and all incidentals. Site preparation will be only as approved or directed by the Engineer.
- C. **Disposal of Waste.** Dispose of all cuttings, debris, and other waste off the right-of-way at approved sites obtained by the Contractor. The contractor will be responsible for obtaining any necessary permits for this work. No separate payment will be made for obtaining the necessary permits, but will be incidental to the other items of the work. Disposal of existing cuttings and brush shall adhere to Section 202 of the current Standard Drawings. Soil, free of large boulders or trash and debris, resulting from various items of excavation, may be used to dress slopes.
- D. **Ditching and Shouldering.** See Standard Specifications. Provide earthen embankment material to provide an earth shoulder wedge the entire length of the project on both side of Main St. & Poplar St. where asphalt shoulders exist.
- E. **Final Dressing, Clean Up, and Seeding and Protection.** After all work is completed, completely remove all debris from the job site. Perform Class A Final Dressing on all disturbed areas. Sow disturbed earthen areas with Seed Mixture No. I and use erosion control blanket in all seeding applications.
- F. **On-Site Inspection.** In accordance with section 102.06, each Contractor submitting a bid for this work will make a thorough inspection of the site prior to submitting a bid and will thoroughly familiarize himself with existing conditions so that the work can be expeditiously performed after a contract is awarded. Submission of a bid will be considered evidence of this inspection having been made. Any claims resulting from site conditions will not be honored by the Department.
- G. **Connection to Existing Storm Sewer System.** Connect to previously installed 5th Street project curb box inlets by coring or other methods approved by the engineer. Thoroughly grout between the proposed pipe and existing curb box inlets with non-shrink grout.

- H. **Caution:** Information shown on the drawings and in this proposal and the types and quantities of work listed are not to be taken as an accurate or complete evaluation of the material and conditions to be encountered during construction. The bidder must draw his own conclusions as to the conditions encountered. The Department does not give any guarantee as to the accuracy of the data and no claim will be considered for additional compensation if the conditions encountered are not in accordance with the information above.
- I. **Utility Clearance.** Except for utility facilities owned by the City of Benton, it is **NOT** anticipated that utility facilities will need to be relocated and/or adjusted from Main St. Sta. 102+33 to Sta. 135+15 and Poplar St. Sta. 501+08 to Sta. 533+00; however, in the event that it is discovered that the work does require that utilities be relocated and/or adjusted, the utility companies will work concurrently with the Contractor while relocating their facilities.
- J. Utility facilities owned by the City of Benton will require relocation. Quantities and plans for this work have been included in this contract.
- K. **Milling and Texturing.** See “Special Note for Asphalt Milling and Texturing”.
- L. **Joint Adhesive.** See “Special Note for Longitudinal Pavement Joint Adhesive”
- M. **Fiber Reinforcement for HMA.** See Special Note for Fiber Reinforcement of HMA
- N. **Striping Removal.** Remove existing striping where necessary, on pavements to be overlaid, by use of water blasting methods. Use black temporary tape to obscure existing striping on permanent pavement that is not intended to be overlaid. Obscure any existing pavement arrows or words (such as only) in the 5th Street intersection that do not comply with the current traffic scheme with black removable tape. Place adjacent runs of tape to make up the full width of the pavement marking.
- O. **Clearing and Grubbing** – Conduct Clearing and Grubbing activities within the limits of full depth construction in accordance with section 202.03.01 of the specifications. Contrary to the Specifications, protect and avoid any trees in the city limits that are not in conflict with the construction of curbs and sidewalks. The contractor will work with the engineer and the City of Benton to identify trees to be removed within the limits of the full depth construction.
- P. **Inlaid Pavement Markers** – Contrary to Section 712.03.04 of the Specifications, inlaid pavement markers will be offset a minimum of 3 inches from the pavement joint.

IV. METHOD OF MEASUREMENT

- A. **Maintain and Control Traffic.** See Traffic Control Plan. Only the bid items listed will be measured for payment. No measurement or payment for striping removal or removal or covering of existing pavement marker lenses will be made and will be considered incidental to “Maintain and Control Traffic”.
- B. **Site Preparation.** Other than the bid items listed, site preparation will not be measured for payment, but will be incidental to the other items of work.
- C. **Erosion Control.** Erosion control items will be measured and paid in accordance with the Standard Specifications for Road and Bridge Construction. No direct measurement for seeding will be made as the seeding is incidental to the erosion control blanket in accordance with the specifications.
- D. **Joint Adhesive.** See “Special Note for Longitudinal Pavement Joint Adhesive”.
- E. **Fiber Reinforcement for HMA.** See Special Note for Fiber Reinforcement of HMA
- F. **Ditching and Shouldering.** See Standard Specifications.
- G. **Temporary Relocation of Signal Head.** Temporary relocation of signal head will be measured by the number of units requiring temporary relocation. Each signal head will be measured for payment each time the unit is moved to a temporary position. Relocation of the signal head back to the permanent location will not be measured for payment and will be considered incidental to “Temporary Relocation of Signal Head”.

V. BASIS OF PAYMENT

No direct payment will be made other than for the bid items listed. All other items required to complete the construction will be incidental to the bid items listed. Existing signs damaged by the Contractor will be replaced by the Contractor at his expense.

- A. **Maintain and Control Traffic.** See Traffic Control Plan and Standard Specifications.
- B. **Site Preparation.** Other than the bid items listed, no direct payment will be allowed for site preparation, but will be incidental to the other items of work.
- C. **Lane Closures.** Contrary to Section 112, lane closures will not be measured for payment but will be incidental to the bid item “Maintain and Control Traffic”. Barricades, portable message boards, and signs shall be paid for one time regardless of how many times they are moved.

- D. Joint Adhesive.** See “Special Note for Longitudinal Pavement Joint Adhesive”
- E. Clearing and Grubbing.** Contrary to the Specifications, no direct payment will be made for “Clearing and Grubbing”.
- F. Ditching and Shouldering.** See Standard Specifications. In addition, no direct payment will be made for providing embankment material for the shouldering required outside the asphalt shoulder.
- G. Fiber Reinforcement for HMA.** See Special Note for Fiber Reinforcement of HMA.
- H. Connection to Existing Storm Sewer System.** No direct payment will be made for connection to existing storm sewer system, and will be considered incidental to the per linear foot of storm pipe - size.
- I. Striping Removal** – Removal of existing striping will be considered incidental to “Maintain and Control Traffic in accordance with the specifications.

NOTES APPLICABLE TO PROJECT

PAVEMENT REHABILITATION & RECONSTRUCTION

US 641

MAIN ST. & POPLAR ST.

MARSHALL COUNTY

Item No. 01-20016.00

MAIN ST. STA. 102+33 to STA. 144+22

POPLAR ST. STA. 501+08 to STA. 542+35

-
1. This project is intended to provide a 3.00" asphalt mill and 4.00" pavement inlay from Main St. Sta. 102+33 to Sta. 135+15 and Poplar St. Sta. 501+08 to Sta. 533+00. Additionally, the project will reconstruct the full roadway sections from Main St. Sta. 135+15 to Sta. 140+22 and Poplar St. Sta. 533+00 to Sta. 542+35. This reconstruction includes a 6.00" Crushed Stone Base layer underlaid with High Strength Geotextile Fabric TY V, 6.5" of Asphalt Base layers, and a 1.50" Asphalt Surface layer
 2. Existing Conditions and Milling Intent – The intent of milling operations from Main St. Sta. 102+33 to Sta. 135+15 and Poplar St. Sta. 501+08 to Sta. 533+00 is to remove 3.00" of existing deteriorating asphalt material and replace with 4.00" of new asphalt pavement. The intent of reconstruction operations from Main St. Sta. 135+15 to Sta. 140+22 and Poplar St. Sta. 533+00 to Sta. 542+35 is to remove the entire existing roadway section and replace correcting deteriorating subgrade, minimum slope, and drainage issues. From Main St. Sta. 135+15 to Sta. 140+22 and Poplar St. Sta. 533+00 to Sta. 542+35 perform the following operations: (1) Excavate all existing asphalt and/or concrete pavement, variable depth, down to the existing underlying subgrade, excavate any poor subgrade material and replace with fabric wrapped aggregate material to stabilize; (2) Place layer of High Strength Geotextile Fabric TY V.; (3) Place 6.00" layer of Crushed Stone Base; (4) Place 4.00" layer of CL3 Asphalt Base 1.00D PG64-22 with aramid fiber reinforcement per special note for fiber reinforcement of asphalt; (5) Place 2.50" layer of CL3 Asphalt Base 0.75D PG76-22 with aramid fiber reinforcement per special note for fiber reinforcement of asphalt; (6) Place final 1.50" CL3 Asphalt Surface 0.50B PG76-22 with aramid fiber reinforcement per special note for fiber reinforcement of asphalt.
 3. Drainage Structure Construction – 3 proposed storm sewer systems will be constructed Main St. Sta. 135+15 to Sta. 140+22 and Poplar St. Sta. 533+00 to Sta. 542+35 and tie to previously constructed curb box inlets on the 5th St. project. Contractor will confirm existing invert and top of grate elevations on curb box inlets the proposed systems will tie to prior to construction and will alert engineer to any difference measured in the field versus what is reported on the proposed drainage section sheets in which proposed pipe slopes or invert elevations will be affected prior to constructing the proposed storm sewer systems. Bed and backfill pipes and small drainage structures in accordance with the Standard Drawings and Standard Specifications.

- 4. **Attention** – The vertical datum for this project is 0.37’ lower than the adjacent 5th Street project, which is currently under construction and features on this project must connect to the 5th Street features. Elevations taken on features constructed on the 5th Street project (if constructed to plan) will measure approximately 0.37’ higher than elevations listed on the 5th Street plans using the datum from this project. Prior to ordering precast materials, and prior to initiating grade sensitive construction that must connect to features on the 5th Street project, the contractor will be required to measure elevations of the connecting features of the 5th Street project and work with the engineer to compensate for any discrepancies.

- 5. The dimensions shown on the typical section for pavement and shoulder widths and thickness from Main St. Sta. 102+33 to Sta. 135+15 and Poplar St. Sta. 501+08 to Sta. 533+00 are nominal or typical dimensions. The actual dimensions to be constructed may be varied to fit existing conditions as directed or approved by the Engineer. It is not intended that existing pavement or shoulders be widened from Main St. Sta. 135+15 to Sta. 140+22 and Poplar St. Sta. 533+00 to Sta. 542+35 unless otherwise specified in the Proposal.

- 6. The contractor is advised of the locations of overhead utility wires on the project. The following location is approximate:
Main St.:

Sta. 102+29	Sta. 112+03	Sta. 128+43
Sta. 103+89	Sta. 112+16	Sta. 129+65
Sta. 104+24	Sta. 113+23	Sta. 130+48
Sta. 105+34	Sta. 114+34	Sta. 130+73
Sta. 105+80	Sta. 117+03	Sta. 134+93
Sta. 108+29	Sta. 120+15	Sta. 139+92
Sta. 108+81	Sta. 122+66	Sta. 143+86
Sta. 109+96	Sta. 122+96	Sta. 144+77
Sta. 110+24	Sta. 126+95	

Poplar St.:

Sta. 503+19	Sta. 517+15	Sta. 532+81
Sta. 504+64	Sta. 518+18	Sta. 534+10
Sta. 505+59	Sta. 522+52	Sta. 534+77
Sta. 506+48	Sta. 523+68	Sta. 537+25
Sta. 509+54	Sta. 524+79	Sta. 540+21
Sta. 509+89	Sta. 525+16	Sta. 541+49
Sta. 513+65	Sta. 526+98	Sta. 541+67
Sta. 514+72	Sta. 528+28	Sta. 542+14
Sta. 516+80	Sta. 531+46	Sta. 542+97

CAUTION: Other overhead utility locations may exist. These and all other utilities should be avoided on this project. If any utility is impacted, it will be the contractor’s responsibility to contact the affected utility and cover any costs associated with the impact.

7. The contractor shall not damage any existing roadway signs. Any roadway signs that are damaged during construction are to be replaced at the contractor's expense in accordance with section 105.08 of the standard specifications.
8. The cleaning of small drainage structures and existing pipe culvert inlets and outlets 36 inches or less in diameter is incidental to the bid item for "Ditching and Shouldering" in accordance with Section 209 of the 2019 Edition of the Standard Specifications for Road and Bridge Construction. (Clean outlets of underdrain pipes and any perforated pipe headwalls that may exist on the project incidental to Ditching and Shouldering). Reshaping of damaged ends of corrugated metal storm, culvert or entrance pipes is also incidental to Ditching and Shouldering. Place and shape an earthen wedge the entire length from Main St. Sta. 102+33 to Sta. 135+15 and Poplar St. Sta. 501+08 to Sta. 533+00 of the asphalt shoulder on the project to eliminate pavement edge drop-offs.
9. Apply "Joint Adhesive" in accordance with "Special Note for Joint Adhesive". Additionally, apply the adhesive immediately prior to paving the adjoining lane.
10. The contractor will be required to pull both lanes and monolithic shoulders to a common point daily. The contractor will be required to pull one lane approximately ½ day's production, then alternate lane closures and pull the adjacent lane up even, daily.
11. See MOT Notes in conjunction with plan sheets R17-R24 for Maintenance of Traffic Phasing.

**TRAFFIC CONTROL PLAN
MARSHALL COUNTY
US 641
MAIN ST. & POPLAR ST.
Item No. 01-20016.00**

**THE CONTROL OF ACCESS ON THIS
PROJECT IS BY PERMIT**

TRAFFIC CONTROL GENERAL

Except as provided herein, "Maintain and Control Traffic" shall be in accordance with the 2019 Standard Specifications and Standard Drawings, current editions and the Manual on Uniform Traffic Control Devices, 2009 Edition. Except for the roadway and traffic control bid items listed, all items of work necessary to maintain and control traffic will be paid at the lump sum bid price to "Maintain and Control Traffic". All lane closures used on the Project will be in compliance with the appropriate Standard Drawings.

Contrary to Section 106.01, traffic control devices used on this project may be new, or used in like new condition at the beginning of the work and maintained in like new condition until completion of the work. Traffic control devices will conform to current MUTCD.

Night work will be allowed on this project. Obtain approval from the Engineer for the method of lighting prior to its use. No additional payment shall be made for night work operations.

TRAFFIC PHASING OVERVIEW

Access to all private and business entrances on the project shall be maintained and open to access through side streets or temporary grading or paving at all times unless otherwise directed by the Engineer. Road and Lane closures will not be permitted during Benton Potato Day which occurs the first Monday of April annually.

Use a lane closure per the Standard Drawings at all times when work is performed from Main St. Sta. 102+33 to Sta. 135+15 and Poplar St. Sta. 501+08 to Sta. 533+00 in the lane or on side slopes adjacent to travel lanes. Perform any maintenance of the shoulder as deemed necessary by the Engineer in order to maintain traffic. Remove failed materials and perform additional patching as directed by the Engineer.

US 641 (Main St. & Poplar St.) shall be closed temporarily in 8 Phases from Main St. Sta. 135+15 to Sta. 140+22 and Poplar St. Sta. 533+00 to Sta. 542+35 for the work to be completed on reconstructing Main St. and Poplar St. and installing the 3 storm sewer systems. Access to residents and businesses shall be maintained at all time by closing Main St. and Poplar St. one at a time so access is maintained through side streets and utilizing temporary grading or pavement.

Refer to Maintenance of Traffic Sheets R17 – R24 for phasing, temporary traffic flows, and temporary construction signage. Traffic will be re-routed in temporary configurations along Poplar St. MOT Phases 1-3 and on Main St. MOT Phases 4-8. The 5th Street signalized intersection will need to be adjusted to accommodate temporary signal heads and bulbs to allow for the temporary lane configurations through MOT Phases 1-3 and then again for MOT Phases 4-8.

CONSTRUCTION PHASING

PHASE 1 – Main St. Reconstruction Sta. 138+60 to Sta. 144+22, 6th St. Reconstruction Sta. 49+70 to Sta. 50+30, 7th St. Reconstruction Sta. 49+70 to Sta. 50+30 – MOT Sheet R17

Phase 1a – MOT Preparation, Temporary Signal and Signage

Prior to reconfiguring traffic for MOT Phases 1-3 place all necessary temporary construction signage to close Main Street to through traffic between 5th Street and 8th Street. Install temporary traffic signal heads at 5th Street intersection and adjust existing signal heads in preparation for two-directional traffic on Poplar St. Place temporary double yellow striping along Poplar St. for two-directional traffic.

Place double yellow on Main Street to allow two lane traffic on portions of Main Street that will remain open to traffic for local access.

Cover all signage in conflict with the proposed traffic scheme.

Phase 1b – Storm Sewer, Curb & Gutter, Pavement, & Sidewalk Construction

Close Main Street to through traffic between 5th Street and 8th Street by routing through traffic in a two-way configuration on Poplar Street between 5th Street and 8th Street.

Close Main St. Sta. 138+60 to Sta. 144+22, 6th St. Sta. 49+70 to Sta. 50+30, & 7th St. Sta. 49+70 to Sta. 50+30 to all traffic installing Type III Barricades and appropriate temporary signing. Access to residences and businesses shall be maintained at all times through side roads or temporary grading. Construct all items of work in this section except placement of final asphalt surface course and final pavement markings.

Phase 1c – Temporary Striping for Two-Directional Traffic

Place temporary double yellow striping on top base layer to allow for two-directional traffic on Main St. through this section for the following phase.

PHASE 2 – Main St. Reconstruction Sta. 137+55 to Sta. 138+60

Phase 2a – MOT Preparation, Temporary Signal and Signage

Install signs and traffic control devices for Phase 2 Construction.

Phase 2b – Roadway Excavation

Close Main St. Sta. 137+55 to Sta. 138+60 to all traffic installing Type III Barricades and appropriate temporary signing. Access to residences and businesses shall be maintained at all times through side roads or temporary grading. Construct all items of work in this section except placement of final asphalt surface course and final pavement markings.

Phase 2c – Temporary Striping for Two-Directional Traffic

Place temporary double yellow striping on top base layer to allow for two-directional traffic on Main St. through this section for the following phase.

PHASE 3 – Main St. Reconstruction Sta. 135+15 to Sta. 137+55

Phase 3a – MOT Preparation, Temporary Signal and Signage

Install signs and traffic control devices for Phase 3 Construction.

Phase 3b – Roadway Excavation

Close Main St. Sta. 135+15 to Sta. 137+55 to all traffic installing Type III Barricades and appropriate temporary signing. Access to residences and businesses shall be maintained at all times through side roads or temporary grading. Construct all items of work in this section except placement of final asphalt surface course and final pavement markings.

Phase 3c – Temporary Striping for Two-Directional Traffic

Place temporary double yellow striping on top base layer to allow for two-directional traffic on Main St. through this section for the following phase.

PHASE 4 – Poplar St. Reconstruction Sta. 539+50 to Sta. 542+35 and 6th St. Reconstruction Sta. 52+38 to Sta. 53+00

Phase 4a – MOT Preparation, Temporary Signal and Signage

Prior to reconfiguring traffic for MOT Phases 4-8 place all necessary temporary construction signage to close Poplar Street between 5th Street and 8th Street. Adjust traffic signal heads at 5th Street intersection to configure two-directional traffic on Main St.

Cover all signage in conflict with the proposed traffic scheme.

Phase 4b – Roadway Excavation

Close Poplar Street to through traffic between 5th Street and 8th Street by routing through traffic in a two-way configuration on Main Street between 5th Street and 8th Street.

Close Poplar St. Sta. 539+50 to Sta. 542+35 and 6th St. Sta. 52+38 to Sta. 53+00 to all traffic installing Type III Barricades and appropriate temporary signing. Access to residences and businesses shall be maintained at all times through side roads or temporary grading. Construct all items of work in this section except placement of final asphalt surface course and final pavement markings.

Phase 4c – Temporary Striping for Two-Directional Traffic

Place temporary double yellow striping on top base layer to allow for two-directional traffic on Poplar St. through this section for the following phase.

PHASE 5 – Poplar St. Reconstruction Sta. 538+25 to Sta. 539+50 – MOT Sheet R21

Phase 5a – MOT Preparation, Temporary Signal and Signage

Install signs and traffic control devices for Phase 5 Construction.

Phase 5b – Roadway Excavation

Close Poplar St. Sta. 538+25 to Sta. 539+50 to all traffic installing Type III Barricades and appropriate temporary signing. Access to residences and businesses shall be maintained at all times through side roads or temporary grading. Construct all items of work in this section except placement of final asphalt surface course and final pavement markings.

Phase 5c – Temporary Striping for Two-Directional Traffic

Place temporary double yellow striping on top base layer to allow for two-directional traffic on Poplar St. through this section for the following phase.

PHASE 6 – Poplar St. Reconstruction Sta. 537+10 to Sta. 538+25 and 7th St. Sta. 52+37 to Sta. 52+98 – MOT Sheet R22

Phase 6a – MOT Preparation, Temporary Signal and Signage

Install signs and traffic control devices for Phase 6 Construction.

Phase 6b – Roadway Excavation

Close Poplar St. Sta. 537+10 to Sta. 538+25 and 7th St. Sta. 52+37 to Sta. 52+98 to all traffic installing Type III Barricades and appropriate temporary signing. Access to residences and businesses shall be maintained at all times through side roads or temporary grading. Construct all items of work in this section except placement of final asphalt surface course and final pavement markings.

Phase 6c – Temporary Striping for Two-Directional Traffic

Place temporary double yellow striping on top base layer to allow for two-directional traffic on Poplar St. through this section for the following phase.

PHASE 7 – Poplar St. Reconstruction Sta. 534+20 to Sta. 537+10 – MOT Sheet R23

Phase 7a – MOT Preparation, Temporary Signal and Signage

Install signs and traffic control devices for Phase 7 Construction.

Phase 7b – Roadway Excavation

Close Poplar St. Sta. 534+20 to Sta. 537+10 to all traffic installing Type III Barricades and appropriate temporary signing. Access to residences and businesses shall be maintained at all times through side roads or temporary grading. Construct all items of work in this section except placement of final asphalt surface course and final pavement markings.

Phase 7c – Temporary Striping for Two-Directional Traffic

Place temporary double yellow striping on top base layer to allow for two-directional traffic on Poplar St. through this section for the following phase.

PHASE 8 – Poplar St. Reconstruction Sta. 533+00 to Sta. 534+20 – MOT Sheet R24

Phase 8a – MOT Preparation, Temporary Signal and Signage

Install signs and traffic control devices for Phase 8 Construction.

Phase 8b – Roadway Excavation

Close Poplar St. Sta. 533+00 to Sta. 534+20 to all through traffic installing Type III Barricades and appropriate temporary signing. Access to residences and businesses shall be maintained at all times through side roads or temporary grading. Construct all items of work in this section except placement of final asphalt surface course and final pavement markings.

PHASE 9 – Reconfigure Traffic on Main St. Sta. 135+15 to 144+22 and Poplar St. Sta. 533+00 to 542+35

Reconfigure signal heads, reconfigure striping, and restore signage to return traffic to the original one-way directional traffic configuration on both Main Street and Poplar Street between 5th Street and 8th Street.

PHASE 10 – Milling and Asphalt Base Main St. Sta. 102+33 to Sta. 135+15 & Poplar St. Sta. 501+08 to Sta. 533+00.

Utilizing alternating lane closures and appropriate traffic control devices for pavement drop-offs on the Main St. & Poplar St. lanes, mill 3.00” of asphalt material from the existing roadway. Begin placement of asphalt base within 2 hours of initiation of the milling process. Do not allow traffic to travel on milled surfaces. All milled areas shall be replaced with the Asphalt Base Layer prior to the end of each work day. Place temporary striping and open all lanes to traffic at the end of each day’s shift.

PHASE 11 – Final Surfacing

Using alternating lane closures, place final asphalt surface on the entire project. Begin final surfacing operations within one week of completion of the total milling and base layer operations in Phase 10. Pave one lane and adjacent monolithic shoulder for approximately ½ days production, then alternate lane closures and pull the other lane and monolithic shoulder, pulling both lanes even daily. Place permanent striping daily as final surfacing operations progress through project.

PHASE 12 – Final Construction Items

Using alternating lane closures, complete construction of any remaining items of work including but not limited to final pavement markings, final cleanup and removal of all temporary signs.

LANE CLOSURES

Contrary to Section 112.04.17, Lane closures, whether long term or short term, will not be measured for payment and will be incidental to the bid item “Maintain and Control Traffic”. Lane closures WILL be permitted during holiday periods however lane closures WILL NOT be permitted on Benton Potato Day which occurs the first Monday of April annually.

ROAD CLOSURES

Road closures from Main St. Sta. 135+15 to Sta. 140+22 and Poplar St. Sta. 533+00 to Sta. 542+35 WILL NOT be allowed on Benton Potato Day which occurs the first Monday of April annually. The contractor shall give the engineer a two (2) week notice prior to any and all road closures. Use eight (8) PCMS message boards one at each of the following locations prior to road closures:

Main St. at Project termini (2)

Poplar St. at Project termini (2)

West 5th St. prior to signalized intersection (1)

West 8th St. (Oak Level Rd.) prior to Main St. intersection (1)

West 12th St. (Mayfield Highway) prior to Main St. intersection (1)

East 12th St. (KY 408) prior to Poplar St. intersection (1)

PCMS shall be in place for one week prior to the dates of closure to advise the traveling public of the dates and times of proposed closure.

SIGNS

Traffic control signs in addition to normal lane closure signing detailed on the Standard Drawings may be required by the Engineer. Additional signs may be needed for lane closures.

Quantities for Road Work ½ Mile (48” x 48”), Road Work 1500 Feet (48” x 48”), Road Work 1000 Feet (48” x 48”), Road Work 500 Feet, Side Road Placards, End Road Work (48” x 24”) signs, etc. have been included in the proposal. These signs shall be constructed on each end of the proposed project as directed by the Engineer. One lane road and flagger signs will be required in accordance with the Standard Drawings and will be required to be moved periodically as the work progresses. Remove lane closure and flagger signage when workers are not present.

During periods of road closures for Main St. Sta. 135+15 to Sta. 140+22 and Poplar St. Sta. 533+00 to Sta. 542+35 refer to Maintenance of Traffic Sheets R17 – R24 for individual sign placements for MOT Phases 1-8. Quantities for these signs have been included in the plans.

Type III Barricades are also shown for MOT Phases 1-8 on sheets R17-R24. Quantities for Type III Barricades have been included in the plan set.

Contrary to section 112, individual signs will be measured only once for payment, regardless of how many times they are set, reset, removed and relocated during the duration of the project. Replacements for damaged signs or signs directed to be replaced by the Engineer due to poor legibility or reflectivity will not be measured for payment. All temporary signage and Type III Barricades shall be paid for one time for a quantity matching the maximum number needed at any given time during the critical MOT Phase. All relocations of those temporary signs and Type III Barricades shall be the responsibility and at the expense of the Contractor. Work for these relocations between MOT Phases shall be included in the Contractor's bid.

Contrary to the section 112, only post or barricade mounted signs will be measured for payment and only signs intended to be continuously in place for more than 3 consecutive days will be measured for payment.

FLASHING ARROWS

Flashing arrows will be paid for once, regardless of how many times they are moved or relocated. The Department will NOT take possession of the flashing arrows upon completion of the work.

PORTABLE CHANGEABLE MESSAGE SIGNS

Provide portable changeable message signs (PCMS) in advance of and within the project at locations listed under **ROAD CLOSURES**. If work is in progress concurrently in both directions, or if more than one lane closure is in place in the same direction of travel, provide additional PCMS. Place PCMS on either end of the project corridor. The locations designated may vary as the work progresses at the direction of the engineer. The messages required to be provided will be designated by the Engineer. The PCMS will be in operation at all times. In the event of damage or mechanical/electrical failure, the contractor will repair or replace the PCMS immediately. PCMS will be paid for once, no matter how many times they are moved or relocated. The Department **WILL NOT** take possession of the signs upon completion of the work. See notes elsewhere in the proposal for additional requirements.

Use PCMS to advise traffic of milled surface and to provide advance notification of upcoming road and lane closures.

PAVEMENT MARKINGS

Maintain temporary or permanent pavement markings any time two lanes of traffic are open without flaggers.

PAVEMENT EDGE DROP-OFFS

Pavement edge drop-offs will be protected by a lane or shoulder closure. Lane closures will be protected with plastic drums, vertical panels, or barricades as shown on the Standard Drawings. Pavement edges that traffic is not expected to cross, except accidentally, shall be treated as follows:

Less than 2" – Protect with a lane closure.

2" to 4" – Protect with a lane closure. Place plastic drums, vertical panels, or barricades every 50 feet. Cones may not be used in place of plastic drums, panels, and barricades at any time. Construct a wedge with compacted cuttings from milling, trenching, or asphalt mixtures with a 3:1 or flatter slope, when work is not active in the drop-off area. Place Type III Barricades at the beginning of the lane closures, and place additional Type III Barricades spaced at 2,500 feet during the time the lane closure is in place.

Greater than 4" – In areas where a pavement drop-off greater than 4" exists, work should proceed continuously so that traffic is exposed to a drop-off for the minimum amount of time necessary to bring the pavement back up to existing grade. Barrel spacing should be 20 feet and appropriate lighting should be utilized to illuminate the area during nighttime operations.

PEDESTRIAN FACILITIES

Impacts to pedestrian traffic will be minimized as much as possible while constructing new sidewalk and installing detectable warnings. This should be done by temporarily closing sections of sidewalk on one side or the other of Main St. & Poplar St. at a given time to maintain access by crossing to adjacent side of road at the nearest cross walk.

TRAFFIC COORDINATOR

Designate an employee to be traffic coordinator. The designated Traffic Coordinator must meet the requirements of section 112.03.12 of the Standard Specifications. The Traffic Coordinator will inspect the project maintenance of traffic once every two hours during the Contractor's operations and at any time a lane closure is in place. The Traffic Coordinator will report all incidents throughout the work zone to the Engineer on the project. The Contractor will furnish the name and telephone number where the Traffic Coordinator can be contacted at all times.

During any period when a lane closure is in place, the Traffic Coordinator will arrange for personnel to be present on the project at all times to inspect the traffic control, maintain the signing and devices, and relocate portable changeable message boards as queue lengths change. The personnel will have access on the project to a radio or telephone to be used in case of emergencies or accidents. The Project Traffic Coordinator will be responsible for ensuring One Lane Road and Flagger signs are maintained at appropriate locations and distance from the work zone and removed when not needed.

COORDINATION OF WORK

The Contractor is advised that other projects may be in progress within or in the near vicinity of this project. The traffic control of those projects may affect this project and the traffic control of this project may affect those projects. The Contractor will coordinate the work on this project with the work of the other contractors. In case of conflict, the Engineer will determine the relative priority to give to work phasing on the various projects.

CONTRACTOR'S AND CONTRACTOR'S EMPLOYEES' VEHICLES

Do not allow contractors equipment or employees to park on private property or block access to any private or business entrances at any time.

REFERENCES

1. Kentucky Transportation Cabinet, Department of Highways, Standard Specifications for Road and Bridge Construction, Edition of 2019.
2. FHWA Manual on Uniform Traffic Control Devices – 2009 Edition.
3. Kentucky Department of Highways Standard Drawings, Current Edition, as applicable:

RDB-270-09	CURB BOX INLET TYPE A (DETAIL DRAWING)
RDB-271-05	CURB BOX INLET TYPE A (STEEL DRAWING)
RDB-272-07	CURB BOX INLET TYPE A (TOP PHASE TABLE)
RDB-273-06	CURB BOX INLET TYPE A (DETAIL & BAR CHART FOR 8" LID)
RDI- 001-010	CULVERT, ENTRANCE AND STORM SEWER PIPE TYPES AND COVER HEIGHTS
RDI-002-05	CULVERT, ENTRANCE AND STORM SEWER PIPE TYPES AND COVER HEIGHTS
RDI-011-03	CULVERT, ENTRANCE & STORM SEWER PIPE TYPES & COVER HEIGHTS
RDI-020-09	PIPE BEDDING FOR CULVERTS ENTRANCE AND STORM SEWER PIPE
RDI-021-01	PIPE BEDDING FOR CULVERTS, ENTRANCE, AND STORM SEWER REINFORCED CONCRETE PIPE
RDI-025-05	PIPE BEDDING TRENCH CONDITION
RDI-026-01	PIPE BEDDING TRENCH CONDITION REINFORCED CONC. PIPE
RDI-035-02	COATING, LININGS AND PAVINGS FOR NON-STRUCTURAL PLATE PIPE
RDI-040-01	EROSION CONTROL BLANKET SLOPE INSTALLATION
RDI-041-01	EROSION CONTROL BLANKET CHANNEL INSTALLATION
RDX-160-06	SECURITY DEVICES FOR FRAMES, GRATES AND LIDS
RDX-210-03	TEMPORARY SILT FENCE
RDX-220-05	SILT TRAP - TYPE A
RDX-225-01	SILT TRAP - TYPE B
RDX-230-01	SILT TRAP - TYPE C
RGS-002-06	SUPERELEVATION FOR MULTI-LANE PAVEMENT
RGX-001-06	MISCELLANEOUS STANDARDS
RGX-040-03	DETECTABLE WARNINGS
RPM-110-07	APPROACHES, ENTRANCES AND MAIL BOX TURNOUT
RPM-150-08	CONCRETE ENTRANCE PAVEMENT AND SIDEWALK
RPM-152-08	CONCRETE ENTRANCE PAVEMENT AND SIDEWALK
RPM-170-09	SIDEWALK RAMPS
TTC-115-03	LANE CLOSURE MULTI-LANE HIGHWAY CASE I
TTC-135-02	SHOULDER CLOSURE
TTD-125-02	PAVEMENT CONDITION WARNING SIGNS
TTS-110-02	MOBILE OPERATION FOR PAINT STRIPING CASE III
TTS-115-02	MOBILE OPERATION FOR PAINT STRIPING CASE IV
TTS-120-02	MOBILE OPERATION FOR DURABLE STRIPING CASE I

4. Kentucky Transportation Cabinet, Department of Highways, Standard Specifications for Road and Bridge Construction, Edition of 2019, Appendix B - Supplemental Specifications, as applicable:

Special Note	Typical Section Dimensions <i>attached</i>
Special Note	Portable Changeable Message Signs <i>attached</i>
Special Note	Before You Dig <i>attached</i>
Special Note	Fixed Completion Date and Liquidated Damages <i>attached</i>
General Note	Asphalt Pavement Ride Quality (Category B) <i>attached</i>
General Note	Compaction of Asphalt Mixtures (Option A) <i>attached</i>
Special Note	Asphalt Milling and Texturing <i>attached</i>
Special Note	Special Note for Intelligent Compaction of Asphalt Mixtures <i>attached</i>
Special Note	Special Note for Paver Mounted Temperature Profiles <i>attached</i>
Special Note	Special Note for Longitudinal Pavement Joint Adhesive <i>attached</i>
Special Note	Special Note for Fiber Reinforcement of Asphalt <i>attached</i>
Special Note	Special Note for Pavement Wedge and Shoulder Monolithic Operation <i>attached</i>
Special Note	Special Note for HMA Electronic Delivery Management System (HMA e-ticketing) <i>attached</i>
Special Note	Special Note for Spray Applied Thermoplastic Pavement Marking Materials <i>attached</i>
Special Note	Special Note for Experimental KYCT and Hamburg Testing <i>attached</i>

SPECIAL NOTE FOR TYPICAL SECTION DIMENSIONS
US 641
MAIN ST. & POPLAR ST.
MARSHALL COUNTY
ITEM NO. 01-20016.00

The dimensions shown on the typical sections for pavement and shoulder widths are nominal or typical dimensions. The actual dimensions to be constructed may be varied to fit existing conditions as directed or approved by the Engineer. It is not intended that existing pavement or shoulders be widened or narrowed **EXCEPT** where specified elsewhere in the Proposal.

SPECIAL NOTE FOR BEFORE YOU DIG

**US 641
MAIN ST. & POPLAR ST.
MARSHALL COUNTY
ITEM NO. 01-20016.00**

Call 1-800-752-6007 toll free a minimum of two and no more than ten business days prior to excavation for information on the location of existing under-ground utilities which subscribe to the before-u-dig (BUD) service. Coordinate excavation with all utility owners, including those who do not subscribe to BUD.

Special Note for Fixed Completion Date and Liquidated Damages

**US 641
MAIN ST. & POPLAR ST.
MARSHALL COUNTY
ITEM NO. 01-20016.00**

Liquidated Damages in the amount specified in Section 108.09 of the Standard Specifications will be assessed for each day work remains incomplete beyond the Specified Project Completion Date. This project has a Fixed Project Completion Date of November 30, 2020.

Contrary to Section 108, liquidated damages will be charged during the months of December through March.

**SPECIAL NOTE FOR
ASPHALT MILLING AND TEXTURING
US 641
MAIN ST. & POPLAR ST.
MARSHALL COUNTY
ITEM NO. 01-20016.00**

Public traffic will not be allowed to travel on milled asphalt surface. Begin paving operations within 2 hours of initiation of the milling operation. Only mill the amount daily that can be overlaid with asphalt base daily. Adjust production times and rates of asphalt milling and asphalt base placement to ensure milled surfaces are covered with the asphalt base layer and two lanes of traffic restores at the end of each production shift.

Millings will become property of the contractor and are to be removed and disposed of by the contractor off-site.

The contractor is advised that concrete patches exist on this project. The contractor will be required to mill existing concrete pavement to the depths required for the typical mill and inlay, and/or asphalt base failure repairs. Any required milling of concrete pavement will be considered incidental to the bid item "Asphalt Pave Milling and Texturing".

December 5, 2018

SPECIAL NOTE FOR FIBER REINFORCEMENT OF ASPHALT

PART 1 – GENERAL

1.1 DESCRIPTION

This Section includes specifications for furnishing all materials, equipment, labor, and incidentals for mixing aramid fiber reinforcements to hot mix asphalt.

1.2 DEFINITIONS

- A. HMA- hot mix asphalt, without aramid fiber.
- B. WMA- warm mix asphalt, without aramid fiber.
- C. Reinforced HMA - hot mix asphalt including aramid fibers properly proportioned, uniformly mixed and coated with asphalt.
- D. Aramid fiber - pure aramid fiber meeting the material properties of this specification, without additive materials.
- E. Delivery material(s) - the material(s) combined with the pure aramid fiber to facilitate Aramid fiber and HMA/WMA proportioning, uniform mixing with the HMA/WMA, and asphalt coating of the aramid fibers.
- F. Aramid product - the aramid supplier’s mixture of pure aramid fiber and delivery material(s).
- G. Manufacturer - the company that produces the aramid fiber from raw materials.
- H. Supplier - the company that offers an aramid product.

PART 2 – PRODUCT

2.1 MATERIALS

Meet the following aramid fiber properties.

Property	Measure	Standard
Material	Aramid	ASTM D276
Form	Monofilament fibers	Manufacturer Certification
Length	0.75-1.50 inches (+/- 10%)	Manufacturer Cert.
Specific Gravity	1.44	ASTM D276
Minimum Tensile Strength	400,000 psi	ASTM D3379
Maximum Tensile Elongation	1.8 %	ASTM D3379
Degradation Temperature	800 degrees F	ASTM D276
Acid and Alkali Resistance	Inert	Manufacturer Cert.

2.2 SUBMITTALS

Submit the following.

- A. Identify the mixing plant.
- B. Provide a specification sheet from the aramid fiber manufacturer.
- C. Provide the following from the aramid product supplier at least three weeks prior to HMA/WMA production.
 - 1. The supplier’s specified mix rate for the aramid product.
 - 2. Certification that the amount of aramid fiber in the aramid product will be between 2.1 and 4.0

December 5, 2018

ounces of pure aramid fiber for each ton of hot mix asphalt.

3. Evidence showing how many times, if any, the supplier's fiber product has been successfully produced at the asphalt plant to be used for the project.
4. Proven method of introducing the aramid fibers into the hot mix asphalt which will not cause the aramid fibers to become airborne.

2.3 JOB MIX FORMULA

When aramid fiber is required as a mixture ingredient, modification to the job mix formula is not required.

PART 3 – EXECUTION

3.1 CONSTRUCTION REQUIREMENTS

Store aramid product in a dry environment and do not allow them to be in contact with moisture.

Mix 3.0 ounces (+/- 1.0 ounces) of aramid fibers per ton of asphalt. The weight applied is for pure aramid fibers only, weight of any delivery materials is not considered.

Have a fiber supplier's representative on site during the first day of production mixing. This requirement can be waived if fiber supplier and HMA/WMA producer can supply evidence of supplier's brand of fiber product being successfully produced by the HMA/WMA producer. The fiber supplier's representative may be on site for additional days as requested by the Engineer.

Introduce the aramid product as follows:

1. Batch Plant

When a batch type plant is used, add the aramid product dosage to the aggregate in the weigh hopper. This may be done with loose fibers and a fiber metering device, or may be done by using manual dosing equipment. If necessary, increase the batch dry mixing time to ensure the aramid fibers are uniformly distributed prior to the injection of asphalt cement into the mixer.

2. Drum Plant

When a continuous or drier-drum type plant is used, add the aramid product to the RAP material to uniformly disperse with the aggregate and injected asphalt. Use a separate aramid product metering device feed system to proportion by weight of total mix, the required percentage of fiber reinforcement into the mixture. Control the aramid product metering system with a proportioning device to meet the dosing requirements.

When a continuous or drier-drum type plant is used for limited production volumes, the addition of the aramid product may be done by using manual measuring tools or equipment and adding them directly onto the RAP belt or into the RAP opening on the plant. Because this is not an automated process, a written protocol must be supplied by the producer to demonstrate how they will attain the dosage requirement, and documentation must be supplied by the

December 5, 2018

material manufacturer assuring this method will produce the desired uniform aramid fiber distribution.

Mix the aramid fiber with the aggregate longer, if needed, to allow thorough distribution of aramid fibers at the end of the mixing process and to promote asphalt coating of individual strands of aramid fiber. At the start of any fiber mixing, visually observe the reinforced HMA/WMA at the plant and in first three trucks at the point of discharge and prior to delivery to the job site. Observation shall include using a shovel or other device. Look for proper distribution of aramid fibers and make mixing adjustments if needed.

WMA: Use of a feeder system will be required for both Drum and Batch plants when producing Warm Mix Asphalt to ensure correct distribution and coating of the aramid fibers. This requirement maybe waved if the asphalt producer can demonstrate complete melting of the delivery material and proper incorporation of the aramid fibers into the WMA.

3.2 ACCEPTANCE

Acceptance of the reinforced HMA/WMA will include the following factors:

1. Aramid fiber is properly proportioned based on documentation comparing fiber feed to HMA/WMA mix production. A log of the total amount of aramid fibers applied certified by fiber manufacturer/supplier shall be required daily.
2. By visual inspection at the end of the mixing process, there is no clumping of aramid fiber or aramid delivery product and the aramid fibers are uniformly distributed.
3. All other mixture and density requirement of the asphalt as detailed in the Standard Specifications, current edition, shall apply.

PART 4 - MEASUREMENT AND PAYMENT

The Department will measure the quantity of Fiber Reinforcement for HMA/WMA as ton of asphalt placed with fibers. Each ton of asphalt placed with the aramid fibers according to this special note will be measured and paid for at the contract unit bid price per ton, and shall include full compensation for furnishing all labor, tools, equipment, and incidentals for doing all the work involved in adding the fibers to HMA/WMA.

<u>Code</u>	<u>Pay Item</u>	<u>Pay Unit</u>
24785EC	Fiber Reinforcement for HMA	Tons

SPECIAL NOTE FOR PAVEMENT WEDGE AND SHOULDER MONOLITHIC OPERATION

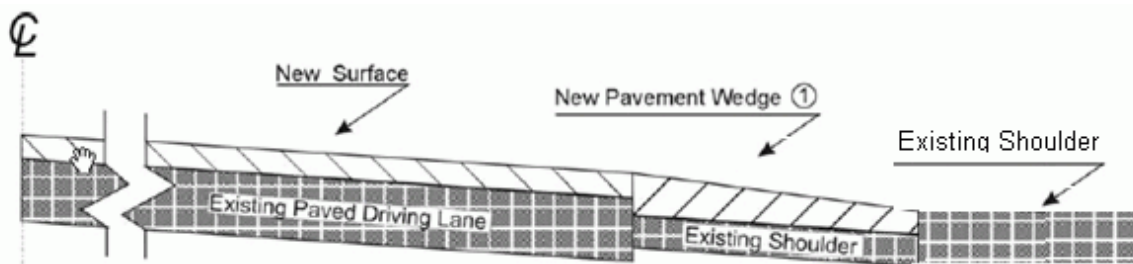
1.0 MATERIALS. Provide an Asphalt Surface Mixture conforming to Section 403 of the Standard Specifications, as applicable to the project, for the pavement wedge.

2.0 CONSTRUCTION. Place the specified Asphalt Surface Mixture on shoulders monolithically with the driving lane. Prime the existing shoulder with tack material as the Engineer directs before placing the wedge. Construct according to Section 403.03 of the Standard Specifications.

Equip the paver with a modified screed that extends the full width of the wedge being placed and is tapered to produce a wedge. Obtain the Engineer's approval of the modified screed before placing shoulder wedge monolithically with the driving lane.

The wedge may vary in thickness at the edge of the milled area in the shoulder. If the area to receive the shoulder wedge is milled prior to placement, during rolling operations pinch the outside edge of the new inlay wedge to match the existing shoulder elevation not being resurfaced. Unless required otherwise by the Contract, construct rolled or sawed rumble strips according to Section 403.03.08, as applicable.

The following sketch is primarily for the computation of quantities; however, the wedge will result in a similar cross-section where sufficient width exists. Do not construct a shoulder for placing the wedge unless specified elsewhere in the Contract.



① Slope varies, but is down from the driving lanes except on outside of some curves where superelevation controls.

3.0 MEASUREMENT. The Department will measure Asphalt Surface Mixture placed as the pavement wedge according to Section 403.

4.0 PAYMENT. The Department will make payment for the completed and accepted quantities of Asphalt Surface Mixtures on pavement wedges according to Section 403.

**SPECIAL NOTE FOR HMA ELECTRONIC DELIVERY
MANAGEMENT SYSTEM
(HMA e-Ticketing)**

This Special Note will apply when indicated on the plans or in the proposal. Section references herein are to the Department's Standard Specifications for Road and Bridge Construction current edition.

1.0 DESCRIPTION. Incorporate a GPS Fleet Management System for all HMA delivered to the project in order to monitor, track, and report loads of HMA during the construction processes from the point of measurement and loading to the point of incorporation to the project.

2.0 MATERIALS AND EQUIPMENT. Submit to the Engineer for approval, no fewer than 30 days prior to HMA placement activities, a GPS fleet management system supplier that can provide a qualified representative for on-site technical assistance during the initial setup, pre-construction verifications, and data management and processing as needed during the Project to maintain equipment.

Provide operator settings, user manuals, training videos, and required viewing/export software for review. Provide equipment that will meet the following:

1. A wireless fleet management or GPS device that is capable of tracking all delivery trucks (both company-owned and third-party) must be installed on all trucks and equipment (dump trucks, belly dumps, side-load dumps, transfer vehicles, pavers, or any other trucks/vehicles) used to transfer and incorporate HMA into the project. KYTC personnel shall have the ability to access Real Time monitoring through the use of a mobile device such as an iPad, smartphone, etc.
2. The fleet management system shall be fully integrated with the Contractor's Load Read-Out scale system at the HMA plant site.
3. The fleet management system shall have the ability to measure and track vehicles and their contents (weights and material types) continuously from the plant site to the project site. The system shall have internal battery backup capabilities due to loss of power, and have the ability to store data if GPS connectivity is lost and transmit that same data when unit re-establishes connectivity. To be considered continuous, no two data points shall be more than 60 seconds apart unless the vehicle is stopped. Duration of stop time for any reason shall be recorded.

3.0 CONSTRUCTION. Provide the Engineer with the manufacturer's specifications and all required documentation for data access at the pre-construction conference.

A. Construction Requirements

1. Install and operate equipment in accordance with the manufacturer's specifications.
2. Verify the GPS is working within the requirements of this Special Note.

B. Data Deliverables

Provide to the Engineer a means in which to gather report summaries by way of iOS apps, web pages, or any other method at the disposal of the Engineer. The Engineer may request data at any time during paving operations.

1. Real-time Continuous Data Items

Provide the Engineer access to a GIS map-based data viewer which displays the following information in real-time with a web-based system compatible with iOS and Windows environments.

- Each Truck
 - UniqueTruck ID
 - Truck status
 - Time At Source
 - Time At Destination
 - Time At Paver
 - Time At Scale
 - Time to and from plant/job
 - Time Stopped with Engine Running
 - Time of last transmission
 - Location (Latitude and Longitude in decimal degrees to nearest 0.000001) every 60 seconds
 - Description of Material being transported (i.e. asphalt base, asphalt surface)
 - Mix Design Number
 - Net Weight of material being transported to the nearest 0.01 ton
 - Running Daily Total of Net Weight of material being transported to nearest 0.01 ton.
 - Project Number
- Scale Location
- Project Location
- Point of Delivery (i.e. paver)

2. Daily Summary

The following summary information shall be provided to the Engineer electronically within 4 hours of beginning operations on the next working day

- For each Material
 - List of Individual Loads
 - Contractor Name
 - Project Number
 - Unique Truck ID
 - Net Weight For Payment (nearest 0.01 tons)
 - Date
 - Mix Temperature at Time of Loading, Fahrenheit (to be key entered by plant)
 - Time Loaded
 - Time Unloaded
 - Delivery Location (Latitude/Longitude in decimal degrees to nearest 0.0000001)
- For each Bid Item
 - Total Quantity for Payment (nearest 0.01 tons)

4.0 MEASUREMENT. The Department will measure the HMA electronic delivery management system as a lump sum item.

5.0 PAYMENT. The Department will make payment for the completed and accepted quantities under the following:

1. Payment is full compensation for all work associated with providing all required equipment, training, and documentation.
2. Delays due to GPS satellite reception of signals or equipment breakdowns will not be considered justification for contract modifications or contract extensions.
3. Payment will be full compensation for costs related to providing the GPS system, including all equipped pavers and transfer vehicles, integration with plant load-out systems, and any software required for the construction and reporting process. All quality control procedures including the GPS systems representative's technical support and on-site training shall be included in the Contract lump sum price.

<u>Code</u>	<u>Pay Item</u>	<u>Pay Unit</u>
24986EC	HMA ELECTRONIC DELIVERY MANAGEMENT SYSTEM	LS

SPECIAL NOTE FOR SPRAY APPLIED THERMOPLASTIC PAVEMENT MARKING MATERIALS

I. DESCRIPTION

Except as provided herein, all work shall be performed in accordance with the Department's Standard Specifications, Interim Supplemental Specifications, applicable Standard and Sepia Drawings, applicable Special Provisions and Special Notes, current editions. Article references are to the Standard Specifications. This project shall consist of furnishing all labor, equipment, materials and incidentals for the following:

- (1) Spray applied thermoplastic pavement marking materials with reflectorized glass beads for permanent applications

II. MATERIALS

- A. DROP ON BEADS.** Use beads that will ensure the pavement marking material will meet retroreflectivity requirements. The Department will evaluate the beads as part of the marking system through retroreflectivity readings.
- B. APPROVAL.** Select materials that conform to the composition and physical characteristic requirements below when evaluated in accordance with AASHTO T-250 or other test methods as cited. The Department will sample and evaluate for approval each lot of thermoplastic material delivered for use per contract prior to installation of the thermoplastic material. Do not allow the installation of thermoplastic material until it has been approved by the Division of Materials. Allow the Department a minimum of 10 working days to evaluate and approve thermoplastic material from the date sampled.
- C. Composition.** Use a maleic-modified glycerol ester resin (alkyd binder) to formulate the thermoplastic material. Ensure the pigment, pre-mix beads, and filler are uniformly dispersed in the resin. Use material that is free from all dirt and foreign material. Provide independent analysis data and certification for each formulation stating the total concentration of each heavy metal present, the test method used for each determination, and compliance to 40 CFR 261 for leachable heavy metals content.

COMPOSITION (Percentage by Weight)		
Component	White	Yellow
Binder, ⁽¹⁾	26.0 min.	26.0 min.
Glass Beads (Premixed)	30 - 40	30 - 40
Titanium Dioxide (Rutile, Type II)	10.0 min.	—
Calcium Carbonate & Inert Fillers ⁽²⁾	42.0 max.	50.0 max.
Heavy Metals Content	Comply with 40 CFR 261	Comply with 40 CFR 261

⁽¹⁾Use a binder that consists of a mixture of synthetic resins, at least one being solid at room temperature, and high boiling point plasticizers. Ensure that at least one-third of the binder composition is solid maleic-modified glycerol ester resin and is not less than 8 percent by weight of the entire material formulation. Do not use alkyd binder that contains petroleum based hydrocarbon resins.

⁽²⁾The manufacturer may choose the amount of calcium carbonate and inert fillers, providing all other requirements of this section are met.

D. Physical Characteristics. For thermoplastic material heated for 4 hours at 425°F under agitation, conform to the following requirements.

a) Color. As determined with a spectrophotometer using D65 illuminant with a 45 degree entrance angle and 0 degree observation angle geometry.

CIELAB Color Coordinates		
	Yellow	White
Daytime Color (CIELAB) Spectrophotometer using illuminant D65 at 45° illumination and 0° viewing with a 2° observer	L* 81.76 a* 19.79 b* 89.89 Maximum allowable variation 6.0ΔE*	L* 93.51 a* -1.01 b* 0.70 Maximum allowable variation 6.0ΔE*
Nighttime Color (CIELAB) Spectrophotometer using illuminant A at 45° illumination and 0° viewing with a 2° observer	L* 86.90 a* 24.80 b* 95.45 Maximum allowable variation 6.0ΔE*	L* 93.45 a* -0.79 b* 0.43 Maximum allowable variation 6.0ΔE*

b) Set Time. Use material that, when applied at a temperature range of 375 ± 25 °F and thickness of 60 ± 10 mils, sets to bear traffic in not more than 2 minutes when the air and road surface temperature is approximately ≥ 50 ± 3 °F, and not more than 10

minutes when the air and road surface temperature is approximately $< 50 \pm 3$ °F.

- c) **Softening Point.** Ensure that the thermoplastic material has a softening point of 180 ± 15 °F.
 - d) **Bond Strength.** Ensure that the bond strength of the thermoplastic material to concrete exceeds 180 psi.
 - e) **Cracking Resistance at Low Temperature.** Ensure that the thermoplastic material shows no cracks when observed from a distance exceeding one foot.
 - f) **Impact Resistance.** Ensure the impact resistance of the thermoplastic material is a minimum of 50 inch-pounds.
 - g) **Flash Point.** Use thermoplastic material that has a flash point not less than 475 °F.
- E. PACKAGING.** Package thermoplastic material in suitable 50 pound containers to which the material shall not adhere during shipment or storage. Include a label stating that the thermoplastic material is to be maintained with a temperature range of 350 – 400°F during application. Provide the thermoplastic material in granular form.
- F. SHELF LIFE.** Ensure that the thermoplastic material conforms to this section for a period of one year. Replace any thermoplastic material not conforming to the above requirements.
- G. MANUFACTURER’S TESTING.** Perform testing in accordance with AASHTO T-250 on a minimum of one composite sample per 10,000 pounds, or portion thereof, per lot of thermoplastic produced.
- H. CERTIFICATION.** Submit manufacturer’s certification stating conformance to the requirements of this section for each lot of extruded thermoplastic delivered for use on projects. Clearly state the manufacture, formulation identification, product name, color, date of manufacturer, total quantity of lot produced, actual quantity of thermoplastic material represented, sampling method utilized to obtain the samples, and required manufacturer’s testing data for each composite sample tested to represent each lot produced.

III. CONSTRUCTION METHODS

- A. SURFACE PREPARATION.** The contractor will be required to sweep all pavement surfaces prior to striping and maintain the cleaning operation far enough in advance of the striping operation to prevent any dust from the cleaning operation from mixing with the paint. The sweeper must maintain contact with the roadway. When the Engineer determines abnormal amounts of debris or other material have accumulated beyond the capability of the required sweeping unit which will require shoveling or other means to

remove, the Engineer will make arrangements, prior to painting, to have the material removed by the Department.

B. INSTALLATION. Install thermoplastic materials in accordance with Section 714, Durable Pavement Striping, and the following exceptions:

- Install the thermoplastic materials at a minimum thickness of 60 mils.
- Ensure the material temperature is maintained between 350 and 400°F.
- Do not allow the material temperature to exceed 400°F.
- Removal of existing stripe on asphalt surfaces is not required.

C. RETROREFLECTIVITY. The Department will evaluate installed markings in accordance with Section 714.03.06, Proving Period for Durable Markings.

IV. METHOD OF MEASUREMENT

A. ACCEPTANCE AND PAYMENT. The Department will accept spray applied thermoplastic materials based on compliance of the manufacturer’s certification and conformance of test results obtained by the Department to the requirements of this special note.

Contrary to Section 714.03.08, Acceptance of Non-Specification Thermoplastic Markings, the Department will not accept non-specification compliant markings. Remove non-specification compliant markings by water blasting. The Department will perform random thickness tests on applied markings to determine compliance to thickness requirements

IV. BASIS OF PAYMENT

The Department will make payment for the completed and accepted quantities under the following:

<u>Code</u>	<u>Pay Item</u>	<u>Pay Unit</u>
24995EC	PAVE STRIPING-SPRAY THERMO-6 IN W	LF
24996EC	PAVE STRIPING-SPRAY THERMO-6 IN Y	LF

The Department will consider payment as full compensation for furnishing all labor, materials, equipment, and incidentals required to construct spray applied thermoplastic pavement markings.

SPECIAL NOTE FOR EXPERIMENTAL KYCT AND HAMBURG TESTING

1.0 General

1.1 Description. The KYCT (Kentucky Method for Cracking Test) and the Hamburg test results will help determine if the mixture is susceptible to cracking and rutting. During the experimental phase, data will be gathered and analyzed by the Department to determine the durability of the bituminous mixes. Additionally, the data will help the Department to create future performance based specifications which will include the KYCT and Hamburg test methods.

2.0 Equipment

2.1 KYCT Testing Equipment. The Department will require a Marshall Test Press with digital recordation capabilities. Other CT testing equipment may be used for testing with prior approval by the Department.

2.2 Water Baths. One or more water baths will be required that can maintain a temperature of 77⁰ +/- 1.8⁰ F with a digital thermometer showing the water bath temperature. Also, one water bath shall have the ability to suspend gyratory specimen fully submerged in water in accordance with AASHTO T-166, current edition.

2.3 Hamburg Wheel Track Testing. The department encourages the use of the PTI APA/Hamburg Jr. test equipment to perform the loaded wheel testing. The Department will allow different equipment for the Hamburg testing, but the testing device must be approved by the Department prior to testing.

2.4 Gyratory Molds. Gyratory molds will be required to assist in the production of gyratory specimens in accordance with AASHTO T-312, current edition.

2.5 Ovens. Adequate (minimum of two ovens) will be required to accommodate the additional molds and asphalt mixture necessary to perform the acceptance testing as outlined in Section 402 of the Kentucky Standard Specifications for Road and Bridge Construction, current edition.

2.6 Department Equipment. The Department will provide gyratory molds, PINE 850 Test Press with digital recordation, and CT testing equipment to assist during this experimental phase so data can be gathered. Hamburg test specimens will be submitted to the Division of Materials for testing on the PTI APA/Hamburg Jr if the asphalt contractor or district materials office does not have an approved Hamburg testing device.

3.0 Testing Requirements

3.1 Acceptance Testing. Perform all acceptance testing and aggregate gradation as according with Section 402 and Section 403 of the Kentucky Standard Specifications for Road and Bridge Construction, current edition.

3.2 KYCT Testing. Perform crack resistance analysis (KYCT) in accordance with the current Kentucky Method for KYCT Index Testing during the mix design phase and during the plant production of all surface mixtures. For mix design approvals, submit KYCT results on the Department MixPack. For Class 4 mixtures, submit ingredient materials to the Division of Materials for informational verification.

3.2.1 KYCT Frequency. Obtain an adequate sample of hot mix asphalt to insure the acceptance testing, gradation, and KYCT gyratory samples can be fabricated and is representative of the bituminous mixture. Acceptance specimens shall be fabricated first, then immediately after, fabricate the KYCT samples with the gyratory compactor in accordance with Section 2.4 of this Special Note. Analysis of the KYCT specimens and gradation will be required one per subplot produced from the same asphalt material and at the same time as the acceptance specimen is sampled and tested.

3.2.2 Number of Specimens and Conditioning. Fabricate specimens in accordance with the Kentucky Method for KYCT Index Testing. Contrary to the method, fabricate a minimum of 3 and up to 6 test specimens. The specimens shall be compacted at the temperature in accordance to KM 64-411. KYCT mix design specimens shall be short-term aged conditioned for four hours at compaction temperature in accordance to KM 64-411. Plant produced bituminous material will not be required for age conditioning and shall be fabricated immediately after the gyratory acceptance specimens have been fabricated. An acceptable transport container will be required to prevent the asphalt mixture from losing heat and to maintain the compaction temperature of the asphalt mixture until the KYCT gyratory samples can be fabricated. This will eliminate reheating of the asphalt mixture. To insure confidence and reliability of the test results provided by KYCT testing and Hamburg testing, reheating of the asphalt mixture is strongly discouraged. If reheating does occur, provide documentation on the Asphalt Mixtures Acceptance Workbook (AMAW).

3.2.3 Record Times. For each subplot, record the time required between drying aggregates in the plant to KYCT specimen fabrication. The production time may vary due to the time that the bituminous material is held in the silo. Record the preconditioning time when the time exceeds the one hour specimen cool down time as required in accordance to The Kentucky Method for KYCT Index Testing. The preconditioning time may exceed an hour if the technician is unable to complete the test on the same day or within the specified times as outlined in The Kentucky Method for KYCT Index Testing. The production time and the preconditioning time shall be recorded on the AMAW.

3.2.4 File Name. As according to section 7.12 of The Kentucky Method for KYCT Index Testing, save the filename with the following format; "CID_Approved Mix Number_Lot Number_Sublot Number_Date"

3.3 Hamburg Testing. Perform the rut resistance analysis (Hamburg) in accordance to AASTHO T-324, not to exceed 20,000 passes for all bituminous mixtures during the mix design phase and production. For mix design approvals, submit Hamburg results on the Department

MixPack. For Class 4 mixtures, submit ingredient materials to the Division of Materials for informational verification.

3.3.1 Hamburg Testing Frequency. Perform testing and analysis per lot of material. The plant produced bituminous material sampled for the Hamburg test does not have to be obtained at the same time as the acceptance and KYCT sample. If the Hamburg test sample is not obtained at the same time as the KYCT sample, determine the Maximum Specific Gravity of the KYCT sample in accordance with AASHTO T-209 coinciding with the Hamburg specimens.

3.3.2 Record Times. Record the production time as according to section 3.2.3 in this special note. Also record the time that the specimens were fabricated and the time the Hamburg testing was started. All times shall be recorded on the AMAW.

3.3.3 File Name. Save the Excel spreadsheet with the following file name; “Hamburg_CID_Approved Mix Number_Lot Number_Sublot Number_Date” and upload the file into the AMAW.

4.0 Data

Submit the AMAW and all test data that was obtained for acceptance, gradation, KYCT, and Hamburg testing within five working days once all testing has been completed for a lot to Central Materials Lab and the District Materials Engineer. Also, any data and or comments that the asphalt contractor or district personnel deem informational during this experimental phase, shall also be submitted to the Central Materials Lab and the District Materials Engineer. Any questions or comments regarding any item in this Special Note can be directed to the Central Office, Division of Materials, Asphalt Branch.

5.0 KYCT Video Demonstration

<https://youtu.be/84j0bM45-hg>

6.0 Payment

Any additional labor and testing equipment that is required to fabricate and test the KYCT and Hamburg specimens shall be considered to be incidental to the asphalt surface line item. The Department will perform the testing for the KYCT and Hamburg specimens if a producer does not possess the proper equipment.

June 3, 2019

SPECIAL NOTE FOR TRAFFIC SIGNAL LOOP DETECTORS

1.0 DESCRIPTION. Be advised that there are existing traffic signal loop detectors within the construction limits of this project. Except as specified herein, perform traffic signal loop replacement in accordance with the Department's Standard/Supplemental Specifications, Special Provisions, Special Notes, and Standard/Sepia Drawings, current editions and as directed by the Engineer. Article references are to the Standard Specifications. Furnish all materials, labor, equipment, and incidentals for replacement of traffic signal loop installation(s) and all other work specified as part of this contract.

1.1 Pre-bid Requirements. Each Contractor submitting a bid for this work shall make a thorough inspection of the site prior to submitting his bid and shall thoroughly familiarize himself with existing conditions so that the work can be expeditiously performed after a Contract is awarded. Information provided in the Plans regarding types and quantities of work is not to be taken as an accurate or complete evaluation of the materials and conditions to be encountered during construction. The bidder must make his own determinations as to the conditions encountered.

2.0 MATERIALS. Except as specified herein, furnish materials in accordance with Subsection 732.02 and Section 835. Provide for materials to be sampled and tested in accordance with the Department's Sampling Manual. Make materials available for sampling a sufficient time in advance of the use of the materials to allow for the necessary time for testing, unless otherwise specified in this Special Note.

2.1 Maintain and Control Traffic. See Traffic Control Plan.

2.2 Sand. Furnish natural sand meeting the requirements of Subsection 804.04.01.

2.3 Seeding. Furnish Seed Mix Type I.

2.4 Loop Saw Slot and Fill. Furnish loop sealant, backer rod, and non-shrink grout according to the Saw Slot Detail.

2.5 Junction Boxes. Furnish junction box type B, #57 aggregate, and geotextile filter type IV according to junction box detail.

2.6 Cable No. 14/1 Pair (Lead-in). Furnish cable that is specified in Section 835. Cable shall be ran splice free. This shall include splice kits to connect to the loop wire.

2.7 Conduit. Furnish and install appropriate conduit from transitions to the roadway, junction boxes and poles. See details below.

3.0 CONSTRUCTION. Except as specified herein, install and test Traffic Signal Loop Detectors in accordance with Section 723 and the drawings.

3.1 Testing. The Contractor shall test all loops and cable no. 14/1 pair (lead-in) according to Subsection 723.03.17 before and after milling the roadway. The Contractor may have to separate the loop from the lead-in to perform this test. If the loop/lead-in meets the requirement in Section 723 at the controller cabinet, the loop/lead-in shall not be replaced. If existing loops do not meet the requirements in Subsection 723.03.17, the loops shall be replaced. Replacement loops may be installed either before or after the milling process.

Traffic Signal Loop Detectors

Page 2 of 8

The Contractor shall verify that loops (both existing and replacement loops) meet the requirements per Subsection 723.03.17 before the final surface is laid. If loops do not meet conditions of Subsection 723.03.17, the Contractor shall replace them before the resurfacing activities begin. If replacement loops have to be reinstalled, the costs of reinstallation shall be incidental to the milling bid item. The Contractor shall re-splice loops to the lead-in with the proper splice as noted in the spec book.

3.2 Coordination. Notify the Engineer in writing, two (2) weeks prior to beginning any work. The Engineer will contact the District Traffic Engineer to coordinate the Department's operations with the Contractor's work.

3.3 Connection. The Contractor shall schedule all signal loop installation to ensure the new loops are connected to the lead-in and operational within 5 calendar days of the old loops being damaged and/or disconnected. This requirement includes damage caused by any work activity associated with the project. If the new signal loops are not functioning as intended following 5 calendar days, the Department may assess Liquidated Damages at a rate of \$500 per calendar day per signal location until the loops are operating at pre-construction conditions. All liquidated damages will be applied cumulatively.

3.4 Maintain and Control Traffic. See Traffic Control Plan.

3.5 Milling. On projects involving milling and texturing of the existing pavement, install loops in the existing pavement before or after performing the milling and texturing. After milling, the remnant contents of the existing saw slot (grout, loop wires, backer rod, and/or loop sealant) may not be flush with the top of the milled portion of the surface. In such cases, clear the saw slot of loose remnant contents and refill the saw slot with natural sand. Obtain the Engineer's approval of the stabilized saw slot prior to resurfacing. The Department will not measure for separate payment clearing and stabilizing the saw slot and shall consider this work incidental to milling.

3.6 Loop Saw Slot and Fill. The following is a typical step by step procedure for the installation of a loop.

- 1) Carefully mark the slot to be cut, perpendicular to the flow of traffic and centered in the lane.
- 2) Make each saw-cut 3/8-inch wide and at a depth such that the top of the backer rod is a minimum of 4 inches below the surface of asphalt pavement.
- 3) Drill a 1½ inch core hole at each corner and use a chisel to smooth corners to prevent sharp bends in the wire.
- 4) Clean all foreign and loose matter out of the slots and drilled cores and within 1 foot on all sides of the slots using a high pressure washer.
- 5) Completely dry the slots and drilled cores and within 1 foot on all sides of the slots.
- 6) Measure 9-12 inches from the edge of the paved surface (shoulder break or face of curb) and drill a 1½ inch hole on a 45° angle to the conduit adjacent to the roadway.
- 7) Closely inspect all cuts, cores, and slots for jagged edges or protrusions prior to the placement of the wire. All jagged edges and protrusions shall be ground or re-cut and cleaned again.

Traffic Signal Loop Detectors

Page 3 of 8

- 8) Place the loop wire splice-free from the termination point (cabinet or junction box) to the loop, continue around the loop for two turns (6'x30' loop) or three turns (6'x6' loop), and return to the termination point.
- 9) Push the wire into the saw slot with a blunt object such as a wooden stick. Make sure that the loop wire is pushed fully to the bottom of the saw slot. Screwdrivers shall not be used.
- 10) Install duct sealant to a minimum of 1 inch deep into the cored 1½ inch hole.
- 11) Apply loop sealant from the bottom up and fully encapsulate the loop wires in the saw slot. The wire should not be able to move when the sealant has set.
- 12) Cover the encapsulated loop wire with a continuous layer of backer rod along the entire loop and home run saw slots such that no voids are present between the loop sealant and backer rod.
- 13) Finish filling the saw cut with non-shrinkable grout per manufacturer's instructions. Alleviate all air pockets and refill low spaces. There shall be no concave portion to the grout in the saw slot. Any excess grout shall be cleaned from the roadway to alleviate tracking.
- 14) Clean up the site and dispose of all waste off the project.
- 15) Ensure that the grout has completely cured prior to subjecting the loop to traffic. Curing time varies with temperature and humidity.

3.7 Final Dressing, Clean Up, and Seeding. After all work is completed, clean work sites and all disturbed areas. Dispose of all waste and debris off the right of way at sites obtained by the Contractor at no additional cost to the Department. Sow all disturbed earthen areas with Seed Mix Type I.

3.8 Removal. The Contractor shall remove all existing junction boxes, wire from spans/poles/junction boxes/conduits, and conduits. The removal will be incidental to the project.

3.9 Property/Roadway Damage. The Contractor shall be responsible for all damage to public and/or private property resulting from the work. Upon completion of the work, restore all disturbed highway features and private property in like kind design and materials at no additional cost to the Department.

3.10 Right-of-Way Limits. The Department has not established exact limits of Right-of-Way. Limit work activities to obvious Right-of-Way and work areas secured by the Department through Consent and Release of the adjacent property owners. Contractor is responsible for all encroachments onto private lands.

3.11 Utility Clearance. Work around and do not disturb existing utilities. The Department does not anticipate any utility impacts for loop installation. If utilities are impacted, work with associated utility companies to resolve issues.

3.12 Control. Obtain the Engineer's approval of all designs required to be furnished by the Contractor prior to incorporation into the work. The Department reserves the right to permit other contractors, state forces, public utility companies, and others to do work during the construction within the limits of, or adjacent to, the project. Conduct operations and cooperate with such other parties so that interference with each other's work will be reduced to a minimum. The Contractor agrees to make no claims against the Department for additional compensation due to delays or other conditions created by

Traffic Signal Loop Detectors
Page 4 of 8

the operations of such other parties. Should a difference of opinion arise as to the rights of the Contractor and others working within the limits of, or adjacent to, the project, the Engineer will decide as to the respective rights of the various parties involved in order to ensure the completion of the work in general harmony and in a satisfactory manner, and the Engineer's decision shall be final and binding upon the Contractor.

3.13 Bore and Jack. Except for situations outlined in 3.15, bore and jack will be used if conduit is under pavement of any kind. The conduit shall be 2" rigid steel conduit under all pavement areas except for the area where the loop transitions from the saw slot. The installation of conduit should follow the below detail.

3.14 Open Cut Roadway. With permission of the Engineer, roadway may be open cut if the conduit is under pavement. The conduit shall be 2" rigid steel conduit under all pavement areas except for the area that the loop transition from the saw slot. The installation of conduit should follow requirements per Section 723.

4.0 MEASUREMENT. See Subsection 723.04 for bid item notes. Additional bid items include the following:

4.1 Loop Test. The Department will measure the quantity as each individual unit loop tested. The Department will not measure disconnection, reconnection, traffic control, re-splicing per specifications, before and after testing per note above, and any associated hardware for payment and will consider them incidental to this item of work.

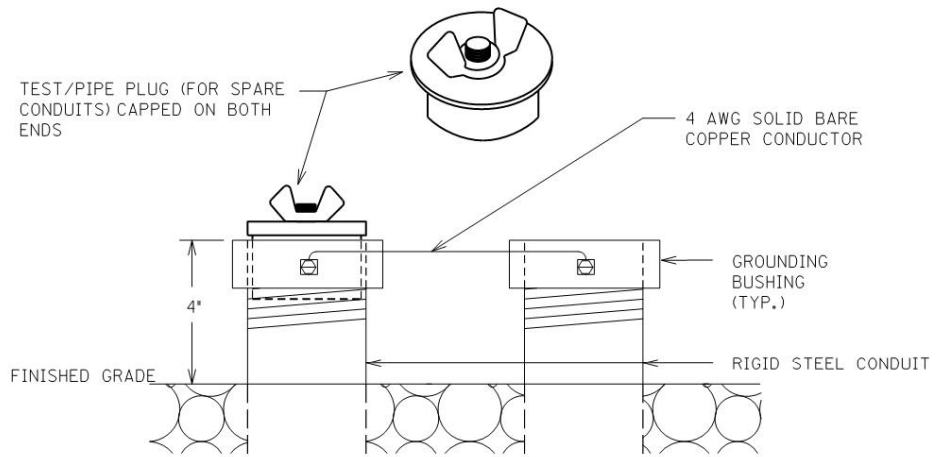
5.0 PAYMENT. The Department will make payment for the completed and accepted quantities of listed items according to Subsection 723.05 in addition to the following:

<u>Code</u>	<u>Pay Item</u>	<u>Pay Unit</u>
Conduit 1"	4792	Linear Foot
PVC Conduit – 1 ¼ inch – sch 80	24900EC	Linear Foot
PVC Conduit – 2 inch – sch 80	24901EC	Linear Foot
Conduit 2"	4795	Linear Foot
Electrical Junction Box type B	4811	Each
Loop Test	24963ED	Each
Trenching and Backfilling	4820	Linear Foot
Loop Wire	4830	Linear Foot
Cable-No. 14/1 Pair	4850	Linear Foot ¹
Loop Saw Slot and Fill	4895	Linear Foot ¹
Bore and Jack Conduit	21543EN	Linear Foot ³
Open Cut Roadway	4821	Linear Foot ³

The Department will consider payment as full compensation for all work required under these notes and the Standard Specifications.

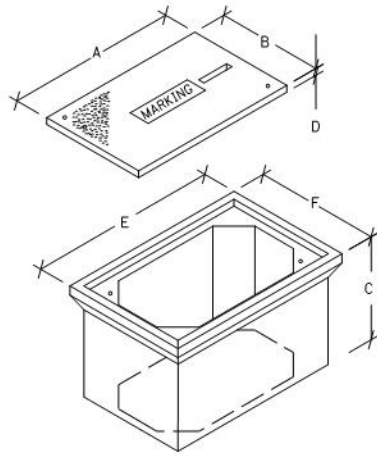
Traffic Signal Loop Detectors

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TEST/PIPE PLUG(FOR SPARE CONDUITS) AND GROUNDING DETAIL

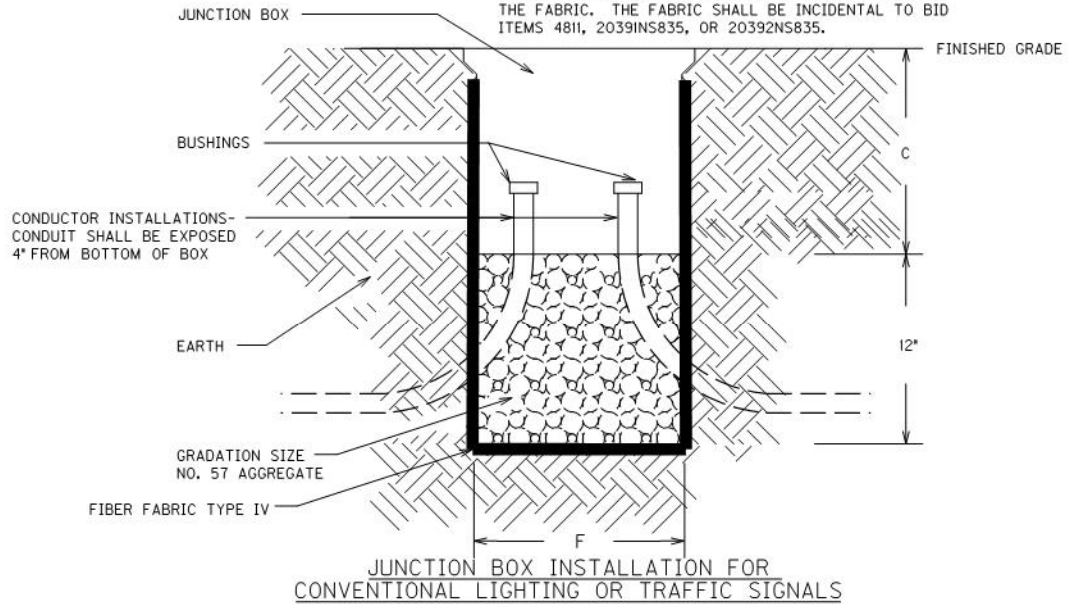
Traffic Signal Loop Detectors
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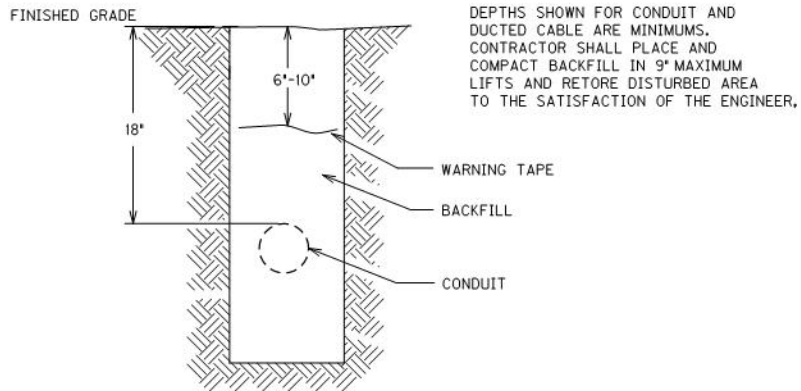
JUNCTION BOX DIMENSIONS (NOMINAL)						
	A	B	C	D	E	F
TYPE A	23"	14"	27"	2"	25"	15"
TYPE B	18"	11"	12"	1 3/4"	20"	13"
TYPE C	36"	24"	30"	3"	38"	26"

• MINIMUM
NOTE: STACKABLE BOXES ARE PERMITTED

BEFORE THE INSTALLATION OF THE #57 AGGREGATE AND JUNCTION BOX, THE CONTRACTOR SHALL INSTALL GEOTEXTILE FILTER FABRIC TYPE IV IN THE HOLE. THE FABRIC SHALL EXTEND TO JUST BELOW THE LIP OF THE JUNCTION BOX AND SHALL BE CONTINUOUSLY ADHERED TO THE EXTERIOR OF THE BOX WITH ADHESIVE. ANY LOCATIONS WHERE CONDUITS ENTER THE BOX, THE FABRIC SHALL BE 'X CUT' ONLY AS MUCH AS NECESSARY TO ALLOW PASSAGE OF EACH INDIVIDUAL CONDUIT THROUGH THE FABRIC. THE FABRIC SHALL BE INCIDENTAL TO BID ITEMS 481I, 2039INS835, OR 20392NS835.



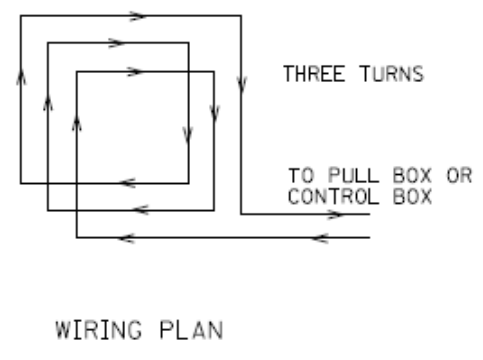
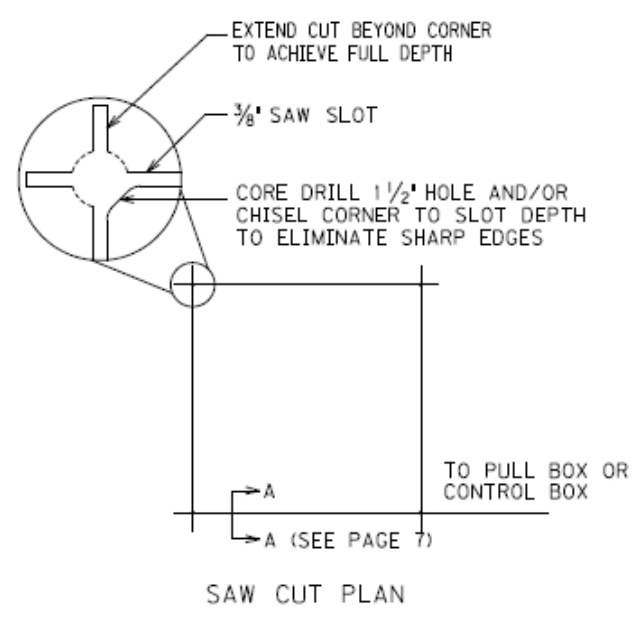
JUNCTION BOX INSTALLATION FOR
CONVENTIONAL LIGHTING OR TRAFFIC SIGNALS



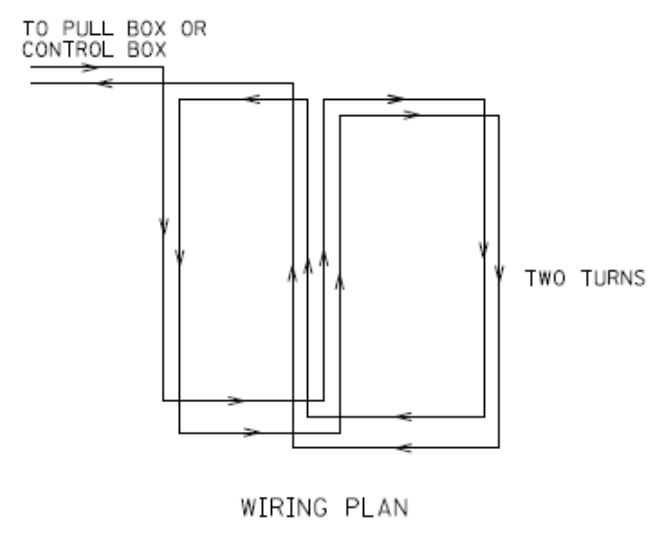
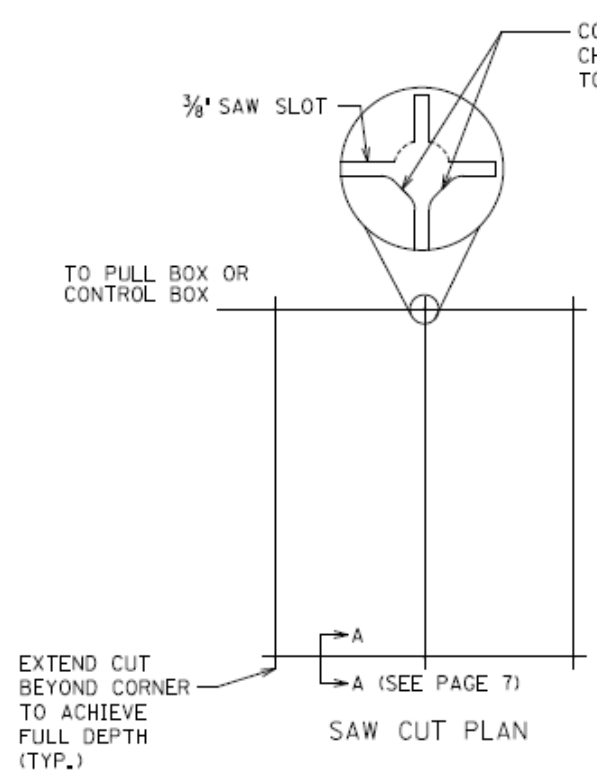
CONDUIT AND WARNING TAPE TRENCH

Traffic Signal Loop Detectors

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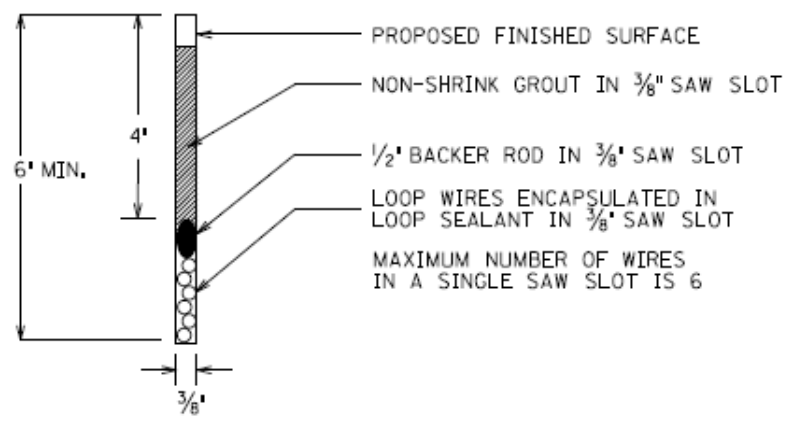
6'X6' LOOP



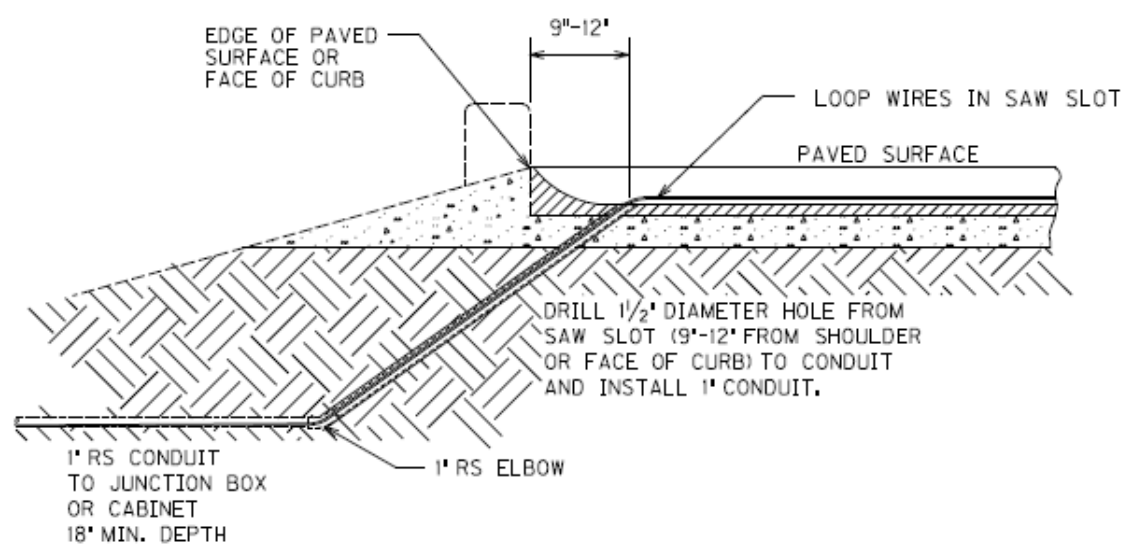
6'X30' QUADRAPOLE LOOP

Traffic Signal Loop Detectors

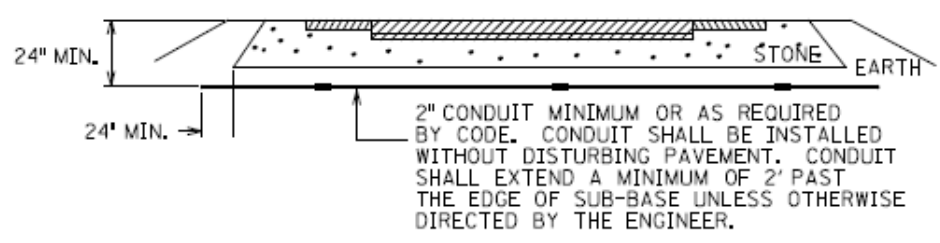
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SECTION A-A (SAW SLOT DETAIL)



SAW SLOT EDGE OF PAVEMENT TRANSITION



CONDUIT UNDER EXISTING PAVEMENT DETAIL

**RECOMMENDATION FOR PICKUP OF ITEMS TO BE INSTALLED
 ON TRAFFIC SIGNALS/LIGHTING**

Item Number: 01-20016.00

County: Marshall

Description: US 641 South Jct 11th & 125h Streets & North Jct 12 St


Cabinets	Master code	Description of Item
3	T-01-0105	ATC Controller
3	T-01-0106	1C w/Maxtime (this should go with item ATC controller)
4	T-01-0510	Isolator, Model 242 (for ped detector and railroad)
5	T-01-0600	Loop Detector, Model 222
13	T-01-0700	Load Switches

Signals		
12	T-02-0009	Siemens 3 Section Signal
18	T-02-0090	Pedestrian signal housing
2	T-02-0320	LED Module 12" green arrow
12	T-02-0330	LED Module 12" red ball
12	T-02-0340	LED Module 12" yellow ball
10	T-02-0350	LED Module 12" green ball
18	T-02-0365	LED Countdown Pedestrian Module

Special items		
3	T-02-0504	Router (this includes power supply/antenna/cabling)
8	T-09-0415	30 X 36 through 36 X 36 sign hanger (New)
2	T-02-0660	Pedstl.top mntg.bkt Two-way
2	T-02-0670	Pedestal
18	T-06-0710	Ped Detector Pole Mount FSA Box
18	T-06-0730	Ped Button w/o Plunger
18	T-17-0015	9 X 15 Countdown Ped Sign DBL Sided

Poles		
1	T-04-0010	Steel Strain Pole 28 foot
8	T-04-0020	Steel Strain Pole 30 foot

Electrical Contractor Name _____
 Electrical Contractor Supervisor _____ Contact number for Supervisor _____
 Project Engineer _____ Contact number for Project Engineer _____
 Project Engineer attests that the mentioned contractor is the actual electrical contractor on this project
 Signature of Project Engineer or Designee _____

	KENTUCKY TRANSPORTATION CABINET Department of Highways DIVISION OF RIGHT OF WAY & UTILITIES	TC 62-226 Rev. 01/2016 Page 1 of 1
RIGHT OF WAY CERTIFICATION		

<input checked="" type="checkbox"/>	Original	<input type="checkbox"/>	Re-Certification	RIGHT OF WAY CERTIFICATION			
ITEM #		COUNTY		PROJECT # (STATE)		PROJECT # (FEDERAL)	
01-20016		MARSHALL		FD52 079 0641 007-009		NHPP 0411 (037)	
PROJECT DESCRIPTION							
ADDRESS PAVEMENT CONDITION OF AC PAVEMENT (US-641 From MP 7.981 to MP 8.824).							
<input checked="" type="checkbox"/> No Additional Right of Way Required							
Construction will be within the limits of the existing right of way. The right of way was acquired in accordance to FHWA regulations under the Uniform Relocation Assistance and Real Property Acquisitions Policy Act of 1970, as amended. No additional right of way or relocation assistance were required for this project.							
<input type="checkbox"/> Condition # 1 (Additional Right of Way Required and Cleared)							
All necessary right of way, including control of access rights when applicable, have been acquired including legal and physical possession. Trial or appeal of cases may be pending in court but legal possession has been obtained. There may be some improvements remaining on the right-of-way, but all occupants have vacated the lands and improvements, and KYTC has physical possession and the rights to remove, salvage, or demolish all improvements and enter on all land. Just Compensation has been paid or deposited with the court. All relocations have been relocated to decent, safe, and sanitary housing or that KYTC has made available to displaced persons adequate replacement housing in accordance with the provisions of the current FHWA directive.							
<input type="checkbox"/> Condition # 2 (Additional Right of Way Required with Exception)							
The right of way has not been fully acquired, the right to occupy and to use all rights-of-way required for the proper execution of the project has been acquired. Some parcels may be pending in court and on other parcels full legal possession has not been obtained, but right of entry has been obtained, the occupants of all lands and improvements have vacated, and KYTC has physical possession and right to remove, salvage, or demolish all improvements. Just Compensation has been paid or deposited with the court for most parcels. Just Compensation for all pending parcels will be paid or deposited with the court prior to AWARD of construction contract							
<input type="checkbox"/> Condition # 3 (Additional Right of Way Required with Exception)							
The acquisition or right of occupancy and use of a few remaining parcels are not complete and/or some parcels still have occupants. All remaining occupants have had replacement housing made available to them in accordance with 49 CFR 24.204. KYTC is hereby requesting authorization to advertise this project for bids and to proceed with bid letting even though the necessary right of way will not be fully acquired, and/or some occupants will not be relocated, and/or the just compensation will not be paid or deposited with the court for some parcels until after bid letting. KYTC will fully meet all the requirements outlined in 23 CFR 635.309(c)(3) and 49 CFR 24.102(j) and will expedite completion of all acquisitions, relocations, and full payments after bid letting and prior to AWARD of the construction contract or force account construction.							
Total Number of Parcels on Project		0	EXCEPTION (S) Parcel #		ANTICIPATED DATE OF POSSESSION WITH EXPLANATION		
Number of Parcels That Have Been Acquired							
Signed Deed							
Condemnation							
Signed ROE							
Notes/ Comments (Use Additional Sheet if necessary)							
LPA RW Project Manager				Right of Way Supervisor			
Printed Name				Printed Name		Greg L. Morgan	
Signature				Signature		Digitally signed by Greg L. Morgan	
Date				Date		Date: 2019.06.25 09:50:02 -05'00'	
Right of Way Director				FHWA			
Printed Name				Printed Name		No Signature Required	
Signature				Signature		as per FHWA-KYTC	
Date		2019.06.25 13:46:15 -05'00'		Date		Current Stewardship Agreement	

UTILITIES AND RAIL CERTIFICATION NOTE

**MARSHALL COUNTY,
NHPP 0411 (037)
FD52 079 064 007-009
MAIN AND POPLAR STREETS (US 641)
ITEM NUMBER 1-20016.00**

GENERAL PROJECT NOTE ON UTILITY PROTECTION

Please coordinate all efforts with KY 811, and contact all utilities to determine their participation therein.

NOTE: DO NOT DISTURB THE FOLLOWING UTILITIES LOCATED WITHIN THE PROJECT DISTURB LIMITS

None

THE FOLLOWING COMPANIES ARE RELOCATING/ADJUSTING THEIR UTILITIES WITHIN THE PROJECT LIMITS AND WILL BE COMPLETE PRIOR TO CONSTRUCTION

N/

THE FOLLOWING COMPANIES HAVE FACILITIES TO BE RELOCATED/ADJUSTED BY THE COMPANY OR THE COMPANY'S SUBCONTRACTOR AND IS TO BE COORDINATED WITH THE ROAD CONTRACT

From 9th street to 15th street, the City of Benton will be relocating a water main along the east side of Main Street. They plan to begin in September, and be complete by December 31st. Please coordinate your work with the City of Benton's contractor.

In front of Regions Bank on Poplar Street, up to 6th Street, and From 6th to 9th Street on the east side of Main Street, Benton Gas will relocate a 2" steel gas main. This should run concurrently with the water and sewer relocations included in the Roadway Contract listed below.

THE FOLLOWING COMPANIES HAVE FACILITIES TO BE RELOCATED/ADJUSTED BY THE ROAD CONTRACTOR AS INCLUDED IN THIS CONTRACT

From 6th Street south to 9th Street, on both Poplar and Main Streets, Water and Sewer relocations will be included in this contract.(see plans)

THE FOLLOWING RAIL COMPANIES HAVE FACILITIES IN CONJUNCTION WITH THIS PROJECT AS NOTED

- No Rail Involved Minimal Rail Involved (See Below) Rail Involved (See Below)

UTILITIES AND RAIL CERTIFICATION NOTE

**MARSHALL COUNTY,
NHPP 0411 (037)
FD52 079 064 007-009
MAIN AND POPLAR STREETS (US 641)
ITEM NUMBER 1-20016.00**

UNDERGROUND FACILITY DAMAGE PROTECTION – BEFORE YOU DIG

The contractor shall make every effort to protect underground facilities from damage as prescribed in the Underground Facility Damage Protection Act of 1994, Kentucky Revised Statute KRS 367.4901 to 367.4917. It is the contractor's responsibility to determine and take steps necessary to be in compliance with federal and state damage prevention directives. The contractor is instructed to contact KY 811 for the location of existing underground utilities. Contact shall be made a minimum of two (2) and no more than ten (10) business days prior to excavation.

The contractor shall submit Excavation Locate Requests to the Kentucky Contact Center (KY 811) via web ticket entry. The submission of this request does not relieve the contractor from the responsibility of contacting non-member facility owners, whom are to be contacted through their individual Protection Notification Center. It may be necessary for the contractor to contact the County Court Clerk to determine what utility companies have facilities in the area. Non-compliance with these directives can result in the enforcement of penalties.

SPECIAL CAUTION NOTE – PROTECTION OF UTILITIES

The contractor will be responsible for contacting all utility facility owners on the subject project to coordinate his activities. The contractor will coordinate his activities to minimize and, where possible, avoid conflicts with utility facilities. Due to the nature of the work proposed, it is unlikely to conflict with the existing utilities beyond minor facility adjustments. Where conflicts with utility facilities are unavoidable, the contractor will coordinate any necessary relocation work with the facility owner and Resident Engineer. The Kentucky Transportation Cabinet maintains the right to remove or alter portions of this contract if a utility conflict occurs.

The utility facilities as noted in the previous section(s) have been determined using data garnered by varied means and with varying degrees of accuracy: from the facility owners, a result of S.U.E., field inspections, and/or reviews of record drawings. The facilities defined may not be inclusive of all utilities in the project scope and are not Level A quality, unless specified as such. It is the contractor's responsibility to verify all utilities and their respective locations before excavating.

UTILITIES AND RAIL CERTIFICATION NOTE

**MARSHALL COUNTY,
NHPP 0411 (037)
FD52 079 064 007-009
MAIN AND POPLAR STREETS (US 641)
ITEM NUMBER 1-20016.00**

Please Note: The information presented in this Utility Note is informational in nature and the information contained herein is not guaranteed.

AREA UTILITIES CONTACT LIST

<u>Utility Company/Agency</u>	<u>Contact Name</u>	<u>Contact Information</u>
<u>Benton Electric</u>	<u>Kent Rudd</u>	<u>270-527-3666</u>
<u>Benton Water and Sewer</u>	<u>Mike Oliver</u>	<u>270-527-8677</u>
<u>Benton Gas</u>	<u>Todd Riley</u>	<u>270-527-3717</u>
<u>AT&T</u>	<u>Amanda Berkley</u>	<u>270-444-5048</u>
<u>MuniNet</u>	<u>Brent Shelton</u>	<u>270-575-4000</u>
<u>Windstream</u>	<u>Jim Galvin</u>	<u>270-748-9249</u>

GENERAL UTILITY NOTES AND INSTRUCTIONS APPLICABLE TO ALL UTILITY WORK MADE A PART OF THE ROAD CONSTRUCTION CONTRACT

The contractor should be aware the following utility notes and KYTC Utility Bid Item Descriptions shall supersede, replace and take precedence over any and all conflicting information that may be contained in utility owner supplied specifications contained in the contract, on plans supplied by the utility owner, or any utility owner specifications or information externally referenced in this contract.

Where information may have been omitted from these notes, bid item descriptions, utility owner supplied specifications or plans; the KYTC Standard Specifications for Road and Bridge Construction shall be referenced.

PROTECTION OF EXISTING UTILITIES

The existing utilities shown on the plans are shown as best known at the time the plans were developed and are to be used as a guide only by the Contractor. The Contractor shall use all means at his disposal to accurately locate all existing utilities, whether shown on the plans or not, prior to excavation. The contractor shall protect these utilities during construction. Any damage to existing utilities during construction that are shown or not shown on the plans shall be repaired at the Contractor's expense.

PREQUALIFIED UTILITY CONTRACTORS

Some utility owners may require contractors that perform relocation work on their respective facilities as a part of the road contract be prequalified or preapproved by the utility owner. Those utility owners with a prequalification or preapproval requirement are as follows:

APPROVED CONTRACTORS - CITY OF BENTON – WATER AND SEWER

*Murtco, Inc.
815 Abell Street
Paducah, KY 42001
270-559-0705*

*Twin States Utilities & Excavation, Inc.
P.O. Box 14*

*9440 Old Glasgow Road
Mt. Hermon, KY 42157
270-427-0710*

*Scott & Ritter, Inc.
2385 Barren River Road
Bowling Green, KY 42101
270-781-9988*

The bidding contractor needs to review the above list and choose from the list of approved subcontractors at the end of these general notes as identified above before bidding. When the list of approved subcontractors is provided, only subcontractors shown on the following list(s) will be allowed to work on that utility as a part of this contract.

When the list of approved subcontractors for the utility work is not provided in these general notes, the utility work can be completed by the prime contractor. If the prime contractor chooses to subcontract the work, the subcontractor shall be prequalified with the KYTC Division of Construction Procurement in the work type of "Utilities" (I33). Those who would like to become prequalified may contact the Division of Construction Procurement at (502) 564-3500. Please note: it could take up to 30 calendar days for prequalification to be approved. The prequalification does not have to be approved prior to the bid, but must be approved before the subcontract will be approved by KYTC and the work can be performed.

CONTRACT ADMINISTRATION RELATIVE TO UTILITY WORK

All utility work is being performed as a part of a contract administered by KYTC; there is not a direct contract between the utility contractor and utility owner. The KYTC Section Engineer is ultimately responsible for the administration of the road contract and any utility work included in the contract.

SUBMITTALS AND CORRESPONDENCE

All submittals and correspondence of any kind relative to utility work included in the road contract shall be directed to the KYTC Section Engineer, a copy of which may also be supplied to the utility owner by the contractor to expedite handling of items like material approvals and shop drawings. All approvals and correspondence generated by the utility owner shall be directed to the KYTC Section Engineer. The KYTC Section Engineer will relay any approvals or correspondence to the utility contractor as appropriate. At no time shall any direct communication between the utility owner and utility contractor without the communication flowing through the KYTC Section Engineer be considered official and binding under the contract.

ENGINEER

Where the word “Engineer” appears in any utility owner specifications included in this proposal, utility owner specifications included as a part of this contract by reference or on the utility relocation plans, it shall be understood the “Engineer” is the Kentucky Transportation Cabinet (KYTC) Section Engineer or designated representative and the utility owner engineer or designated representative jointly. Both engineers must mutually agree upon all decisions made with regard to the utility construction. The Transportation Cabinet, Section Engineer shall make all final decisions in all disputes.

INSPECTOR OR RESIDENT PROJECT REPRESENTATIVE

Where the word “Inspector” or “Resident Project Representative” appears in the utility specifications included in this proposal, utility owner specifications included as a part of this contract by reference or on the utility relocation plans, it shall be understood the “Inspector” or “Resident Project Representative” is the utility owner inspector and KYTC inspector jointly. The Transportation Cabinet, Section Engineer shall make all final decisions in all disputes.

NOTICE TO UTILITY OWNERS OF THE START OF WORK

One month before construction is to start on a utility, the utility contractor shall make notice to the KYTC Section Engineer and the utility owner of when work on a utility is anticipated to start. The utility contractor shall again make confirmation notice to the KYTC Section Engineer and the utility owner one week before utility work is to actually start.

UTILITY SHUTDOWNS

The Contractor shall not shut down any active and in-service mains, utility lines or services for any reason unless specifically given permission to do so by the utility owner. The opening and closing of valves and operating of other active utility facilities for main, utility line or utility service shut downs are to be performed by the utility owner unless specific permission is given to the contractor by the owner to make shutdowns. If and when the utility owner gives the contractor permission to shutdown mains, utility lines or utility services, the contractor shall do so following the rules, procedures and regulations of the utility owner. Any permission given by the utility owner to the contractor to shutdown active and in-service mains, utility lines or services shall be communicated to the KYTC Section Engineer by the utility owner that such permission has been given.

Notice to customers of utility shut downs is sometimes required to be performed by the utility contractor. The contractor may be required; but, is not limited to, making notice to utility customers in a certain minimum amount of time in advance of the shut down and by whatever means of communication specified by the utility owner. The means of communication to the customer may be; but is not limited to, a door hanger, notice by newspaper ad, telephone contact, or any combination of communication methods deemed necessary, customary and appropriate by the utility owner. The contractor should refer to the utility owner specifications for requirements on customer notice.

Any procedure the utility owner may require the contractor to perform by specification or plan note and any expense the contractor may incur to comply with the utility owner’s shut down procedure and notice to customers shall be considered an incidental expense to the utility construction.

CUSTOMER SERVICE AND LATERAL ABANDONMENTS When temporary or permanent abandonment of customer water, gas, or sewer services or laterals are necessary during relocation of utilities included in the contract, the utility contractor shall perform these abandonments as part of the contract as incidental work. No separate payment will be made for service line and lateral abandonments. The contractor shall provide all labor, equipment and materials to accomplish the temporary or permanent abandonment in accordance with the plans, specifications and/or as directed by the engineer. Abandonment may include, but is not limited to, digging down on a water or gas main at the tap to turn off the tap valve

or corporation stop and/or capping or plugging the tap, digging down on a sewer tap at the main and plugging or capping the tap, digging down on a service line or lateral at a location shown on the plans or agreeable to the engineer and capping or plugging, or performing any other work necessary to abandon the service or lateral to satisfactorily accomplish the final utility relocation.

STATIONS AND DISTANCES

All stations and distances, when indicated for utility placement in utility relocation plans or specifications, are approximate; therefore, some minor adjustment may have to be made during construction to fit actual field conditions. Any changes in excess of 6 inches of plan location shall be reviewed and approved jointly by the KYTC Section Engineer or designated representative and utility owner engineer or designated representative. Changes in location without prior approval shall be remedied by the contractor at his own expense if the unauthorized change creates an unacceptable conflict or condition.

RESTORATION

Temporary and permanent restoration of paved or stone areas due to utility construction shall be considered incidental to the utility work. No separate payment will be made for this work. Temporary restoration shall be as directed by the KYTC Section Engineer. Permanent restoration shall be "in-kind" as existing.

Restoration of seed and sod areas will be measured and paid under the appropriate seeding and sodding bid items established in the contract for roadway work.

BELOW ARE NOTES FOR WHEN "INST" ITEMS ARE IN THE CONTRACT MEANING THE UTILITY COMPANY IS PROVIDING CERTAIN MATERIALS FOR UTILITY RELOCATION

MATERIAL

Contrary to Utility Bid Item Descriptions, those bid items that have the text "**Inst**" at the end of the bid item will have the major components of the bid item provided by the utility owner. No direct payment will be made for the major material component(s) supplied by the utility company. All remaining materials required to construct the bid item as detailed in utility bid item descriptions, in utility specifications and utility plans that are made a part of this contract will be supplied by the contractor. The contractor's bid price should reflect the difference in cost due to the provided materials.

The following utility owners have elected to provide the following materials for work under this contract:

No materials are being supplied by the utility owner(s). All materials are to be supplied by the contractor per bid item descriptions, utility specifications and utility plans.

SECURITY OF SUPPLIED MATERIALS

If any utility materials are to be supplied by the utility owner, it will be the responsibility of the utility contractor to secure all utility owner supplied materials after delivery to the project site. The utility

contractor shall coordinate directly with the utility owner and their suppliers for delivery and security of the supplied materials. Any materials supplied by the utility owner and delivered to the construction site that are subsequently stolen, damaged or vandalized and deemed unusable shall be replaced with like materials at the contractor's expense.

Standard Water Bid Item Descriptions

W AIR RELEASE VALVE This bid item description shall apply to all air release valve installations of every size except those defined as “Special”. This item shall include the air release valve, main to valve connecting line or piping, manhole, vault, structure, access casting or doors, tapping the main, labor, equipment, excavation, proper backfill and restoration required to install the air release valve at the location shown on the plans or as directed in accordance with the specifications and standard drawings complete and ready for use. All air release/vacuum valves on a project shall be paid under one bid item regardless of size. No separate pay items will be established for size variations. Only in the case of the uniqueness of a particular air release valve would a separate bid item be established. Please refer to the Utility Company’s Specifications. If the Company does not have specifications, KYTC’s Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

BOLLARDS This item is for payment for furnishing and installing protective guard posts at above ground utility installations. A bollard may consist of, but not limited to, a steel post set in concrete or any other substantial post material. This item shall include all labor, equipment, and materials needed for complete installation of the bollard as specified by the utility owner specifications and plans. If the Company does not have specifications, KYTC’s Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

NOTE: A bid code for this item has been established in standard roadway bid items and shall be used for payment of this item. The bid code is 21341ND

W CAP EXISTING MAIN This item shall include the specified cap, concrete blocking and/or mechanical anchoring, labor, equipment, excavation, backfill, and restoration required to install the cap at the location shown on the plans or as directed in accordance with the specifications. This item is not to be paid on new main installations. This pay item is only to be paid to cap existing mains. Caps on new mains are incidental to the new main. Any and all caps on existing mains shall be paid under one bid item included in the contract regardless of size. No separate bid items will be established for size variations. Please refer to the Utility Company’s Specifications. If the Company does not have specifications, KYTC’s Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W DIRECTIONAL BORE Payment under this item is made whenever the plans or specifications specifically show directional boring is to be utilized in order to minimize the impact of open cut for the installation of water main under streets, creeks, and etc. Payment under this item shall include the specified bore pipe, labor, and equipment. No separate payment shall be made for bore pipe installed in the bore whether used as a carrier pipe or an encasement of a separate carrier pipe. This item shall also include pipe anchors at each end of the bore when specified to prevent the creep or contraction of the bore pipe. Carrier pipe installed within a bore pipe shall be paid separately under pipe items. Payment under this item shall not be size specific and no separate bid items will be established for size variations. The bore pipe sizes to be included under this item shall be as shown on the plans and/or in the specifications. Any and all directional bores in each contract shall be paid under one directional bore bid item included in the contract regardless of size. Please refer to the Utility Company’s Specifications. If the Company does not have specifications, KYTC’s Specifications shall be referenced. This item shall be paid LINEAR FEET (LF) when complete.

W ENCASEMENT CONCRETE Includes all labor, equipment, excavation, concrete, reinforcing steel, backfill, restoration, and etc., to construct the concrete encasement of the water main as shown on the plans, and in accordance with the specifications and standard drawings. Payment under this item shall be in addition to the carrier pipe as paid under separate bid items. Carrier pipe is not included in this bid item. Any and all concrete encasement shall be paid under one bid item included in the contract regardless of the size of the carrier pipe or the volume of concrete or steel reinforcement as specified in the plans and specifications. No separate bid items will be established for size variations. Measurement of pay quantity shall be from end of concrete to end of concrete. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LINEAR FEET (LF) when complete.

W ENCASEMENT STEEL BORED This item shall include the steel encasement pipe size as specified on the plans and in the specifications, casing spacers, end seals, labor, and equipment to bore and install the encasement in accordance with the plans and specifications, complete and ready for use. The size shall be the measured internal diameter of the encasement pipe. The sizes of encasement to be paid under the size ranges specified in the bid items shall be as follows:

- Range 1 = All encasement sizes greater than 2 inches to and including 6 inches
- Range 2 = All encasement sizes greater than 6 inches to and including 10 inches
- Range 3 = All encasement sizes greater than 10 inches to and including 14 inches
- Range 4 = All encasement sizes greater than 14 inches to and including 18 inches
- Range 5 = All encasement sizes greater than 18 inches to and including 24 inches
- Range 6 = All encasement sizes greater than 24 inches

(Encasement sizes of 2 inches internal diameter or less shall not be paid separately; but, shall be considered incidental to the carrier pipe.) Payment under this bid item shall not include the carrier pipe. Carrier pipe shall be paid under a separate bid item. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LINEAR FEET (LF) when complete.

W ENCASEMENT STEEL OPEN CUT This item shall include the steel encasement pipe size as specified on the plans and in the specifications, casing spacers, end seals, labor, and equipment to open cut and install the encasement in accordance with the plans and specifications, complete and ready for use. The size shall be the measured internal diameter of the encasement pipe. The size encasement to be paid under the size ranges specified in the bid items shall be as follows:

- Range 1 = All encasement sizes greater than 2 inches to and including 6 inches
- Range 2 = All encasement sizes greater than 6 inches to and including 10 inches
- Range 3 = All encasement sizes greater than 10 inches to and including 14 inches
- Range 4 = All encasement sizes greater than 14 inches to and including 18 inches
- Range 5 = All encasement sizes greater than 18 inches to and including 24 inches
- Range 6 = All encasement sizes greater than 24 inches

(Encasement sizes of 2 inches internal diameter or less shall not be paid separately; but, shall be considered incidental to the carrier pipe.) Payment under this bid item shall not include the carrier pipe. Carrier pipe shall be paid under a separate bid item. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LINEAR FEET (LF) when complete.

W FIRE HYDRANT ADJUST Includes all labor, equipment, excavation, materials, and backfill to adjust the existing fire hydrant using the fire hydrant manufacturer's extension kit for adjustments of 18" or less. Adjustments greater than 18" require anchoring couplings and vertical bends to adjust to grade. The Contractor will supply and install all anchor couplings, bends, fire hydrant extension, concrete blocking, restoration, granular drainage material, etc. needed to adjust the fire hydrant complete and ready for use as shown on the plans, and in accordance with the specifications and standard drawings. This also includes allowing for the utility owner inspector to inspect the existing fire hydrant prior to adjusting, contractor returning unusable fire hydrants to the utility owner warehouse and picking up a replacement hydrant. No additional payment will be made for rock excavation. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete and ready for use.

W FIRE HYDRANT ASSEMBLY Includes all labor, equipment, new fire hydrant, isolating valve and valve box, concrete pad around valve box (when specified in specifications or plans), piping, anchoring tee, anchoring couplings, fire hydrant extension, excavation, concrete blocking, granular drainage material, backfill, and restoration, to install a new fire hydrant assembly as indicated on plans and on standard drawings complete and ready for use. No additional payment will be made for rock excavation. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W FIRE HYDRANT RELOCATE This item includes all labor and equipment to remove the existing fire hydrant from its existing location and reinstalling at a new location. This item shall include a new isolating valve and valve box, concrete pad around valve box (when required in specifications or plans), new piping, new anchoring tee, anchoring couplings, fire hydrant extensions, concrete blocking, restoration, granular drainage material, excavation, and backfill as indicated on plans, specifications, and on standard drawings complete and ready for use. This item shall also include allowing for utility owner inspector to inspect the existing fire hydrant prior to reuse, contractor returning unusable fire hydrants to the utility owner warehouse and picking up a replacement hydrant for use, if the existing fire hydrant is determined unfit for reuse. No additional payment will be made for rock excavation. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W FIRE HYDRANT REMOVE This bid item includes removal of an abandoned fire hydrant, isolating valve, and valve box to the satisfaction of the engineer. The removed fire hydrant, isolating valve and valve box shall become the property of the contractor for his disposal as salvage or scrap. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W FLUSH HYDRANT ASSEMBLY This item shall include the flushing hydrant assembly, service line, tapping the main, labor, equipment, excavation, backfill, and restoration required to install the flush hydrant at the location shown on the plans and in accordance with the specifications and standard drawings, complete and ready for use. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W FLUSHING ASSEMBLY This item shall include the flushing device assembly, service line, meter box and lid, tapping the main, labor, equipment, excavation, backfill, and restoration required to install the

flushing device at the location shown on the plans and in accordance with the specifications and standard drawings, complete and ready for use. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W LEAK DETECTION METER This item is for payment for installation of a water meter at main valve locations where shown on the plans for detection of water main leaks. The meter shall be of the size and type specified in the plans or specifications. This item shall include all labor, equipment, meter, meter box or vault, connecting pipes between main and meter, main taps, tapping saddles, casting, yoke, and any other associated material needed for installation of a functioning water meter in accordance with the plans and specifications, complete and ready for use. No separate payment will be made under any other contract item for connecting pipe or main taps. Any and all leak detection meters shall be paid under one bid item included in the contract regardless of size. No separate bid items will be established for size variations. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete and ready for use.

W LINE MARKER This item is for payment for furnishing and installing a water utility line marker as specified by the utility owner specifications and plans. A line marker may consist of a post or monument of whatever materials specified and shall include markings and/or signage on same as specified by plans or specifications. This item shall include all labor, equipment, and materials needed for complete installation of the marker. This item shall be paid EACH (EA) when complete.

W MAIN POINT RELOCATE This item is intended for payment for horizontal and/or vertical relocation of a short length of an existing main at the locations shown on the plans. This bid item is to be used to relocate an existing water main at point locations such as to clear a conflict at a proposed drainage structure, pipe or any other similar short relocation situation, and where the existing pipe material is to be reused. The contractor shall provide any additional pipe or fitting material needed to complete the work as shown on the plans and specifications. The materials provided shall be of the same type and specification as those that exist. Substitution of alternative materials shall be approved by the engineer in advance on a case by case basis. New polyethylene wrap is to be provided (if wrap exists or is specified in the specifications to be used). If it is necessary that the pipe be disassembled for relay, payment under this item shall also include replacement of joint gaskets as needed. Bedding and backfill shall be provided and performed the same as with any other pipe installation as detailed in the plans and specifications. Payment under this item shall be for each location requiring an existing main to be relocated horizontally or vertically regardless of pipe size or relocation length. No separate pay items will be established for pipe size variations or relocation segment length variations. Water Main Relocate shall not be paid on a linear feet basis; but, shall be Paid EACH (EA) at each location when complete and placed in service. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced.

W METER This item is for payment for installation of all standard water meters of all sizes 2 inches ID or less as specified on the plans. This item shall include all labor, equipment, meter, meter box, casting, yoke, and any other associated material needed for installation of a functioning water meter in accordance with the plans and specifications, complete and ready for use. This item shall include connections to the new or existing water service line. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W METER ADJUST This item includes all labor, equipment, excavation, materials, backfill, restoration, and etc., to adjust the meter casting to finished grade (whatever size exists) at the location shown on the plans or as directed in accordance with the specifications and standard drawings complete and ready for use. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W METER RELOCATE This item includes all labor, equipment, excavation, additional fittings, disinfection, testing, restoration, and etc., to relocate the existing water meter (whatever size exists), meter yoke, meter box, casting, and etc., from its old location to the location shown on the plans or as directed, in accordance with the specifications and standard drawings complete and ready for use. The new service pipe (if required) will be paid under short side or long side service bid items. Any and all meter relocations of 2 inches or less shall be paid under one bid item included in the contract regardless of size. Each individual relocation shall be paid individually under this item; however, no separate bid items will be established for meter size variations of 2 inches ID or less. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W METER VAULT SIZE RANGE 1 OR 2 This item is for payment for installation of an underground structure for housing of a larger water meter, fittings, and valves as required by the plans and specifications. This item shall include all labor, equipment, excavation, concrete, manhole castings or access doors, the specified meter(s) valve(s), all piping, and fitting materials associated with installing a functioning meter and vault in accordance with the plans, standard drawings, and specifications, complete and ready for use. The size shall be the measured internal diameter of the meter and piping to be installed. The size meter vault to be paid under size 1 or 2 shall be as follows:

Size Range 1 = All meter and piping sizes greater than 2 inches up to and including 6 inches
Size Range 2 = All meter and piping sizes greater than 6 inches

This item shall be paid EACH (EA) when complete. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced.

W METER/FIRE SERVICE COMBO VAULT This item is for payment for installation of an underground structure for housing of a water meter and fire service piping, fittings, and valves as required by the plans and specifications. This item shall include all labor, equipment, excavation, concrete, manhole castings or access doors, the specified meter(s), valve(s), all piping, and fitting materials associated with installing a functioning meter and fire service vault in accordance with the plans and specifications, complete and ready for use. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W METER WITH PRESSURE REDUCING VALVE (PRV) This item is for payment for installation of all standard water meters with pressure reducing valves (PRV) of all sizes 2 inches ID or less as specified on the plans. This item shall include all labor, equipment, meter, PRV, meter box, casting, yoke, and any other associated material needed for installation of a functioning water meter with PRV in accordance with the plans and specifications, complete and ready for use. This item shall include connections to the new or existing water service line. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced.

This item shall be paid EACH (EA) when complete.

W PIPE This description shall apply to all PVC, ductile iron, and polyethylene/plastic pipe bid items of every size and type to be used as water main, except those bid items defined as “Special”. This item includes the pipe specified by the plans and specifications, all fittings (including, but not limited to, bends, tees, reducers, plugs, and caps), tracing wire with test boxes (if required by specification), polyethylene wrap (when specified), labor, equipment, excavation, bedding, restoration, testing, sanitizing, backfill, and etc., required to install the specified new pipe and new fittings at the locations shown on the plans, or as directed, in accordance with the specifications and standard drawings complete and ready for use. No additional payment will be made for rock excavation. This bid item includes material and placement of flowable fill under existing and proposed pavement, and wherever else specified on the plans or in the specifications. **This item shall include all temporary and permanent materials and equipment required to pressure test and sanitize mains including, but not limited to, pressurization pumps, hoses, tubing, gauges, main taps, saddles, temporary main end caps or plugs and blocking, main end taps for flushing, chlorine liquids or tablets for sanitizing, water for testing/sanitizing and flushing (when not supplied by the utility), chlorine neutralization equipment and materials, and any other items needed to accomplish pressure testing and sanitizing the main installation.** This item shall also include pipe anchors, at each end of polyethylene pipe runs when specified to prevent the creep or contraction of the pipe. Measurement of quantities under this item shall be through fittings, encasements, and directional bores (only when a separate carrier pipe is specified within the directional bore pipe). Measurements shall be further defined to be to the center of tie-in where new pipe contacts existing pipe at the center of connecting fittings, to the outside face of vault or structure walls, or to the point of main termination at dead ends. No separate payment will be made under pipe items when the directional bore pipe is the carrier pipe. Please refer to the Utility Company’s Specifications. If the Company does not have specifications, KYTC’s Specifications shall be referenced. This item shall be paid LINEAR FEET (LF) when complete.

W PLUG EXISTING MAIN This item shall include the specified plug, concrete blocking and/or anchoring, labor, equipment, excavation, backfill, and restoration required to install the plug in an existing in-service main that is to remain at the location shown on the plans or as directed in accordance with the specifications. Any and all plugs on all existing in-service mains shall be paid under one bid item included in the contract regardless of size. No separate bid items will be established for size variations. Please refer to the Utility Company’s Specifications. If the Company does not have specifications, KYTC’s Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

NOTE: This utility bid item is not to be paid on new main installations or abandoned mains. This pay item is to plug existing in-service mains only. Plugs on new mains are incidental to the new main just like all other fittings.

NOTE: Plugging of existing abandon mains shall be performed and paid in accordance with Section 708.03.05 of KYTC Standard Specifications For Road And Bridge Construction and paid using Bid Code 01314 Plug Pipe.

W PRESSURE REDUCING VALVE This description shall apply to all pressure reducing valves (PRV) of every size required in the plans and specifications except those bid items defined as “Special”. Payment under this description is to be for PRVs being installed with new main. This item includes the PRV as specified in the plans and specifications, polyethylene wrap (if required by specification), labor, equipment, excavation, anchoring (if any), pit or vault, backfill, restoration, testing, disinfection, and etc., required to install the specified PRV at the location shown on the plans in accordance with the specifications and standard drawings complete and ready for use. If required on plans and/or proposed adjoining DIP is restrained, PRVs shall be restrained. PRV restraint shall be considered incidental to the

PRV and adjoining pipe. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W PUMP STATION This item is for payment for installation of pumps and an above or below ground structure for housing of the pumps. This item shall include all pumps, piping, fittings, valves, electrical components, building materials, concrete, any other appurtenances, labor, equipment, excavation, and backfill, to complete the pump station installation as required by the plans, standard drawings, and specifications, complete and ready for use. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LUMP SUM (LS) when complete.

W REMOVE TRANSITE (AC) PIPE This item shall include all labor, equipment, and materials needed for removal and disposal of the pipe as hazardous material. All work shall be performed by trained and certified personnel in accordance with all environmental laws and regulations. Any and all transite AC pipe removed shall be paid under one bid item included in the contract regardless of size. No separate bid items will be established for size variations. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LINEAR FEET (LF) when complete.

W SERVICE LONG SIDE This bid item description shall apply to all service line installations of every size bid up to and including 2 inch inside diameter, except those service bid items defined as "Special". This item includes the specified piping material, main tap, tapping saddle (if required), and corporation stop materials, coupling for connecting the new piping to the surviving existing piping, encasement of 2 inches or less internal diameter (if required by plan or specification), labor, equipment, excavation, backfill, testing, disinfection, and restoration, at the locations shown on the plans or as directed, in accordance with the specifications and standard drawings, complete and ready for use. This bid item is to pay for service installations where the ends of the service connection are on opposite sides of the public roadway and the service line crosses the centerline of the public roadway as shown on the plans. The length of the service line is not to be specified. Payment under this item shall not be restricted by a minimum or maximum length. The contractor shall draw his own conclusions as to the length of piping that may be needed. Payment under this item shall include boring, jacking, or excavating across the public roadway for placement. Placement of a service across a private residential or commercial entrance alone shall not be reason to make payment under this item. Private or commercial entrances shall not be considered a public roadway in defining payment under this item. This pay item does not include installation or relocation of meters. Meters will be paid separately. No additional payment will be made for rock excavation or for special bedding required in rock excavation. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W SERVICE SHORT SIDE This bid item description shall apply to all service line installations of every size up to and including 2 inch internal diameter, except those service bid items defined as "Special". This item includes installation of the specified piping material of the size specified on plans, encasement of 2 inches or less internal diameter (if required by plan or specification), main tap, tapping saddle (if required), corporation stop, coupling for connecting the new piping to the surviving existing piping, labor, equipment, excavation, backfill, testing, disinfection, and restoration, at the locations shown on the plans or as directed, in accordance with the specifications and standard drawings, complete and

ready for use. This bid item is to pay for service installations where both ends of the service connection are on the same side of the public roadway, or when an existing service crossing a public roadway will remain and is being extended, reconnected, or relocated with all work on one side of the public roadway centerline as shown on the plans. The length of the service line is not to be specified and shall not be restricted to any minimum or maximum length. Payment shall be made under this item even if the service crosses a private residential or commercial entrance; but, not a public roadway. Private or commercial entrances shall not be considered a public roadway in defining payment under this item. The contractor shall draw his own conclusions as to the length of piping that may be needed. This pay item does not include installation or relocation of meters. Meters will be paid separately. No additional payment will be made for rock excavation or for bedding required in rock excavation. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W SERVICE RELOCATE This item is for the relocation of an existing water service line where a meter is not involved, and where an existing service line can easily be adjusted by excavating alongside and moving the line horizontally and/or vertically a short distance without cutting the service line to avoid conflicts with road construction. This item shall include excavation, labor, equipment, bedding, and backfill to relocate the line in accordance with the plans and specifications complete and ready for use. Payment under this item shall be for each location requiring relocation. Payment shall be made under this item regardless of service size or relocation length. No separate pay items will be established for size or length variation. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W STRUCTURE ABANDONMENT This item is to be used to pay for abandonment of larger above or below ground water structures such as meter vaults, fire pits, pump stations, tanks, and etc. Payment under this item shall not be limited to size or scope; however structures with connecting pipes of 2 inches or less shall not be paid under this item; but, shall be considered incidental to water construction, (i.e., abandonment of standard water meters up to and including 2 inches would not be paid under this item). Payment under this item shall include all labor, equipment, and compacted fill or flowable fill for abandonment of the structure in place and restoration complete. No separate bid items will be established for size or structure variations. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W STRUCTURE REMOVAL This item is to be used to pay for removal of larger above or below ground water structures such as meter vaults, fire pits, pump stations, tanks, and etc. Payment under this item shall not be limited to size or scope; however structures with connecting pipes of 2 inches or less shall not be paid under this item; but, shall be considered incidental to water construction, (i.e., removal of standard water meters up to and including 2 inches would not be paid under this item). Payment under this item shall include all labor, equipment, and compacted backfill for removal of the structure and restoration complete. No separate bid items will be established for size or structure variations. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W TAPPING SLEVE AND VALVE SIZE 1 OR 2 This item shall include the specified tapping sleeve, valve, valve box, concrete pad around valve box (when required in specifications or plans), labor, and equipment to install the specified tapping sleeve and valve, complete and ready for use in accordance with

the plans and specifications. The size shall be the measured internal diameter of the live pipe to be tapped. The size tapping sleeve and valve to be paid under sizes 1 or 2 shall be as follows:

Size 1 = All live tapped main sizes up to and including 8 inches

Size 2 = All live tapped main sizes greater than 8 inches

Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W TIE-IN This bid description shall be used for all main tie-in bid items of every size except those defined as "Special". This item includes all labor, equipment, excavation, fittings, sleeves, reducers, couplings, blocking, anchoring, restoration, disinfection, testing and backfill required to make the water main tie-in as shown on the plans, and in accordance with the specifications complete and ready for use. Pipe for tie-ins shall be paid under separate bid items. This item shall be paid EACH (EA) when complete.

W VALVE This description shall apply to all valves of every size required in the plans and specifications except those bid items defined as "Special". Payment under this description is to be for gate or butterfly valves being installed with new main. This item includes the valve as specified in the plans and specifications, polyethylene wrap (if required by specification), labor, equipment, excavation, anchoring (if any), valve box and valve stem extensions, backfill, concrete pad around valve box (if required by specification), restoration, testing, disinfection, and etc., required to install the specified valve at the location shown on the plans in accordance with the specifications and standard drawings complete and ready for use. If required on plans and/or proposed adjoining DIP is restrained, valves shall be restrained. Valve restraint shall be considered incidental to the valve and adjoining pipe. This description does not apply to cut-in valves. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W VALVE ANCHOR EXISTING This bid item is intended to pay for installation of restraint hardware on an existing valve where no restraint exists to hold the valve in place to facilitate tie-ins and other procedures where restraint is prudent. This work shall be performed in accordance with water specifications and plans. This bid item shall include all labor equipment, excavation, materials and backfill to complete restraint of the designated valve, regardless of size, at the location shown on the plans, complete and ready for use. Materials to be provided may include, but is not limited to, retainer glands, lugs, threaded rod, concrete, reinforcing steel or any other material needed to complete the restraint. Should the associated valve box require removal to complete the restraint, the contractor shall reinstall the existing valve box, the cost of which shall be considered incidental to this bid item. No separate bid items are being provided for size variations. All sizes shall be paid under one bid item. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W VALVE BOX ADJUST Includes all labor, equipment, valve box and valve stem extensions (if required), excavation, backfill, concrete pad around valve box (when specified in specifications or plans), restoration, and etc., to adjust the top of the box to finished grade complete and ready for use. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W VALVE CUT-IN This bid description is for new cut-in valve installations of all sizes where installation is accomplished by cutting out a section of existing main. This item shall include cutting the existing pipe, supplying the specified valve, couplings or sleeves, valve box, concrete pad around valve box (when required in specifications or plans), labor, equipment, and materials to install the valve at the locations shown on the plans, or as directed by the engineer, complete and ready for use. Any pipe required for installation shall be cut from that pipe removed or supplied new by the contractor. No separate payment will be made for pipe required for cut-in valve installation. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W VALVE VAULT This item is for payment for installation of an underground structure for housing of specific valve(s) as required by the plans and specifications. This item shall include all labor, equipment, excavation, concrete, manhole castings or doors, the specified valve(s), all piping, and fitting materials associated with installing a functioning valve vault in accordance with the plans, standard drawing, and specifications, complete and ready for use. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

SECTION 02713

WATER DISTRIBUTION SYSTEM

PART 1 – GENERAL

1.01 DESCRIPTION

- A. Work included – Provide treated water distribution system as shown on the Drawings, specified herein, and needed for a complete and proper installation.
- B. Related Work – Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections, in Division 1 of these Specifications.

1.02 QUALITY ASSURANCE – Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.03 SUBMITTALS

- A. Submit six copies of product data sheets on material to be used.
- B. Product Data
 - 1. Materials list of items proposed to be provided under this Section;
 - 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements;
 - 3. Names and addresses of the nearest service and maintenance organization that readily stocks repair parts;
 - 4. Manufacturer's recommended installation procedures which, when approved by the Engineer, will become the basis for accepting or rejecting actual installation procedures used on the Work.

PART 2 – PRODUCTS

2.01 PIPE, FITTINGS, AND ACCESSORIES

- A. General – Provide pipe, fittings, and accessories complying with the following requirements:
- B. Pipe:
 - 1. Ductile iron pipe:
 - a. Provide Class 350 ductile iron pipe complying with ANSI A-21.51 (AWWA C151).
 - b. Use cement mortar lining complying with ANSI A-21.4 (AWWA C104) with a bituminous exterior seal coat.
 - c. Provide 8 mil thick, polyethylene meeting the requirements of ANSI A-21-5 (AWWA C105). All D.I.P. shall be wrapped. Cost of poly wrap is incidental to the cost of D.I.P.

2. Plastic pipe:
 - a. For pipe sizes 4" thru 12" use PVC pipe conforming to standards set forth in AWWA C900 with a dimension ratio of 14.
3. High Density Polyethylene Pipe (HDPE).
 - a. Use ductile iron pipe size (DIPS) with a standard dimension ratio (SDR) of 11 with a working pressure rating of 160 psi and conforming to ASTM 3350 as manufactured by ISCO Industries (PE 3608/3408) or approved other.
4. Restrained-Joint PVC Pipe – Use Certa-Lok C900 RJ/PVC pipe with a working pressure rating of 200 psi as manufactured by Certain Teed Pipe and Plastics Group or approved equal.

C. Joints

1. DI (Ductile Iron) Push-On-Joint – Comply with ANSI A-21.11 (AWWA C111)
2. DI (Ductile Iron) Flanged Joint – Comply with either ANSI A-21.15 (AWWA C115) with a 125-lb flanged joint or ANSI B-16.1 - ANSI B16.5 with a 125-lb cast iron "Uni-Flange" adapter as manufactured by Uni-Flange Corporation.
3. PVC (Polyvinyl-Chloride) Joint
 - a. Provide a push on type joint with a continuous elastomeric ring gasket compressed into the annular space between bell and spigot end of pipe complying with ASTM D3139.
 - b. A typical joint assembly shall be tested by a qualified independent laboratory per test requirements of ASTM D3212-81. The manufacturer shall submit to the Engineer sufficient copies of certification and test results by shipment to the job site that will permit the Owner to retain two copies.
4. HDPE (High Density Polyethylene) Joint – Form joints by heat fusion method in accordance with the manufacturer's recommendations and ASTM D3261.

D. Fittings

1. Use mechanical joint fittings for all exterior below grade pressure piping complying with AWWA C153.
2. Use cement lining complying with ANSI A-21.4 (AWWA C104) with a bituminous seal coat.
3. All fittings must be manufactured in the United States of America.
4. Double wrap all fittings with 8-mil polyethylene wrap prior to placing concrete thrust blocking. Tape polyethylene wrapping around pipe barrels to provide a water tight seal around the fittings
5. HDPE Fittings – Use HDPE fittings conforming to AWWA C906 requirements. Provide mechanical joint adapter kits at transition points to other pipe types.

E. Valves

1. Gate Valves

- (a) Provide gate valves in accordance with Section 15110 of these specifications.
 - (b) Provide connections as required for the piping in which they are installed.
 - (c) Provide all exterior below grade valves with standard operating nut and all interior valve with handwheel. Provide tee handle socket operating wrenches of suitable size.
 - (d) Provide below grade valves with valve boxes of the screw type adjustable pattern with a lid marked water.
 - (e) Valves 3" and smaller
 - (1) Provide all bronze, screwed, single wedge disc, screw in bonnet, packing gland, and nut, with a non-rising stem.
 - (2) Provide below grade valves with a suitable precast concrete box with a lid marked water.
2. Butterfly Valves
- (a) With the exception of tapping valves, all valves 16" and larger shall be butterfly valves unless otherwise noted on the drawings.
 - (b) Provide butterfly valves in accordance with Section 15110 of these specifications.
3. Tapping Valves – Use tapping valves meeting the general operating and material requirements of Section E.1. of this specification. Use Mueller RWGV tapping valve, or approved equal.
4. Valve Boxes
- (a) For butterfly valves, use cast iron, slip type adjustable pattern, similar and equal to Bingham & Taylor or Utility Pipe Model CVB562. For gate valves, use cast iron screw type adjustable pattern, similar and equal to Bingham & Taylor 4905.
 - (b) The boxes shall have a lid marked "water" similar and equal to Bingham & Taylor 4905-L1.5.
 - (c) The valve boxes shall be of sufficient length to permit the valve to set at the depth indicated by required cover on the pipe shown on the Drawings. Provide cast iron valve box extensions, as necessary, similar or equal to Bingham & Taylor 4905-X.
 - (d) Provide valve stem extensions on all water lines greater than 5 feet deep. Valve stem extensions shall be similar or equal to Bingham & Taylor 5051.
- F. Restraint Joint Gaskets – Use restrained joint gaskets in all DIP installation within steel encasement. In addition, use restrained joint gaskets in all pipe joints within creek crossings and roadway crossings and within one DIP pipe joint connection either side of steel encasement. Use "Field Lok" gaskets as manufactured by U.S. Pipe and Foundry Company.
- G. Thrust Restraint Glands for Ductile Iron Pipe – Use thrust restraint glands ensuring 360° contact between the gland and the pipe wall. Acceptable restraints are 1100 Series Megalug as manufactured by EBAA Iron, Uni-Flange Series 1300 joint restraint devices as manufactured by Ford Meter Box Company, Inc. or approved other. Use thrust restraint

glands on each mechanical joint connection 6" in diameter and larger. All glands shall be domestic.

- H. Thrust Restraint Glands for PVC Pipe – Use thrust restraint glands ensuring 360° contacts between the gland and the pipe wall. Acceptable restraints are 2000 Series Megalug as manufactured by EBAA Iron, Use Uni-flange Series 1300 joint restraint devices as manufactured by Ford Meter Box Company, Inc. or approved other. Use thrust restraint glands for PVC pipe on each mechanical joint connection 6" in diameter and larger. All glands shall be domestic.

SO-EZ MJ Gland Snap-On Gaskets, as manufactured by Ford Meter Box Company, Inc. shall not be accepted for use on any mechanical joint piping or restraint.

- I. Joint Restraint Glands for PVC Pipe – Use joint restraint glands ensuring 360° contact between the gland and the pipe wall. Use Uni-Flange Series 1390 joint restraint devices as manufactured by Ford Meter Box Company, Inc., or approved other. Use joint restraint glands at field engineer's discretion or as shown on the Plans. All glands shall be domestic.
- J. Petroleum -Resistant Gaskets – Where noted on the drawings, provide petroleum-resistant gaskets for push-on and mechanical joint fittings. Petroleum-resistant gaskets shall be manufactured from Nitrile in accordance with AWWA C111. All gaskets shall be domestic.
- K. Stainless Steel All-thread Rods – Use 3/4" diameter stainless steel all-thread rods complying with ASTM Type 303 stainless steel. Use rods at field engineer's discretion or as shown on the Plans. Cost associated with contractor installation, equipment, materials, etc., is incidental to the cost for pipe.
- L. Service Saddles – Use service saddles as manufactured by Ford Meter Box Company with all service connections made on PVC or asbestos cement pipe.
- M. Tapping Sleeves – Use stainless steel FAST Tapping Sleeves as manufactured by Ford Meter Box Company, or approved equal. Tapping sleeves shall be domestic.
- N. Steel Casing Pipe – Use steel casing pipe conforming to ASTM A139. All encasement shall have a minimum yield strength of 35,000 psi and a minimum thickness of .25 inches for casing diameter of 16 inches and less, 0.312 inch thickness for casing diameters of 18, 20, and 22 inches, and 0.344 inch thickness for casing diameter of 24 inches. Coat the outside of all steel encasement pipe with either an epoxy or bituminous coating. Casing spacers and end seals are considered incidental to the unit price of the steel encasement.
- O. Fire Hydrants

1. General

- (a) Use fire hydrants complying in all respects with the latest revision for AWWA C502. Use fire hydrants with one (1) 4½" pumper nozzle with National Standard Thread and two (2) 2½" bronze hose nozzles with National Standard Thread. Secure all caps with long heavy chains. Use hydrants with a one piece bronze operating nut to be opened in a counterclockwise direction. Use hydrants with a compression main valve, bronze seat ring with bronze seating. Bronze upper plate, high tensile steel stem, and O-ring seals. The inlet valve opening shall be 5¼" diameter with 6½" ID standpipe section and a 6" high strength cast iron inlet connection.
- (b) Use hydrants with replaceable, breakable sections, or components such that in

the event the barrel is broken off, the valve will remain closed, the barrel will not be damaged, and the stem will not be bent.

- (c) Furnish hydrants from the factory with one shop coat of bright red Inertol Rust Inhibitive Primer No. 621 with a minimum dry mil thickness of 1.5.
 - (d) Use Mueller Super Centurion 250 or American Darling B-84-B-5.
2. Hydrant Valves – Equip all 5¼” hydrants with 6” gate valves as shown on the drawings.
 3. Anchoring Tee – Use standard mechanical joint anchoring tees with a split ductile iron rotating gland on the branch. Use trim tyte ductile iron mechanical joint anchoring tees as manufactured by U.S. Pipe and Foundry Company, Birmingham, Alabama, or an approved equal. Tee shall be domestic.
 4. Hydrant Connecting Pieces – Use hydrant connecting pieces with integrally cast standard mechanical joint on one end and a split ductile iron rotating gland on the other. Use hydrant connecting pieces as manufactured by American Cast Iron Pipe Company, Birmingham, Alabama, No. A108954 or an approved equal. Connecting piece shall be domestic.

P. Copper Pipe

1. Pipe – Use Type "K" soft copper tubing complying with ASTM Specifications B 88 and AWWA Specification C800. Install service lines with a continuous run of pipe from the main to the meter.
2. Fittings – All fittings or unions for the copper service lines shall be of standard brass compression stop type for flared connections. Threads on fittings shall conform to AWWA C800, "Standard Threads for Underground Service Line Fittings."
3. Verification – Verify the size of existing service lines prior to installation of replacement or relocated service lines. Notify the Engineer prior to installation of any discrepancies between plan information and field verified information.

Q. Polyethylene Pipe

1. Pipe – Use copper tubing size, DR 9, P.E. Municipal Service tubing complying with ASTM Specifications ASTM D2737. Install service lines with a continuous run of pipe from the main to the meter. All PE service lines shall be installed with a continuous run of tracer wire.
2. Fittings – All fittings or unions for the P.E. service lines shall be of standard brass type for pack joint connections. Threads on fittings shall conform to AWWA C800, "Standard Threads for Underground Service Line Fittings."
3. Verification – Verify the size of existing service lines prior to installation of replacement or relocated service lines. Notify the Engineer prior to installation of any discrepancies between plan information and field verified information.
4. Service Saddle – Use Romac Style 101N-H & 202N-H Service Saddles (or approved equal) for connections on HDPE piping.

PART 3 – EXECUTION

- 4.01 SURFACE CONDITIONS – Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work.

Do not proceed until unsatisfactory conditions are corrected.

4.02 FIELD MEASUREMENT – Make necessary measurements in the field to assure precise fit of items in accordance with the approved design.

4.03 HANDLING

- A. Handle pipe accessories so as to ensure delivery to the trench in sound, undamaged condition:
 - 1. Carry pipe into position; do not drag.
 - 2. Use pinch bars or tongs for aligning or turning the pipe only on the bare end of the pipe.
- B. Thoroughly clean interior of pipe and accessories before lowering pipe into trench. Keep clean during laying operations by plugging or other method approved by the Engineer.
- C. Before installation, inspect each piece of pipe and each fitting for defects: Material found to be defective before or after laying: Replace with sound material meeting the specified requirements, and without additional cost to the Owner.
- D. Store rubber gaskets in a-cool dark place until just prior to time of installation.

4.04 PIPE CUTTING

- A. Cut pipe neatly and without damage to the pipe.
- B. Unless otherwise recommended by the pipe manufacturer, and authorized by the Engineer, cut pipe with mechanical cutter only.
 - 1. Use wheel cutters when practical.
 - 2. Cut plastic pipe square, and remove all burrs.

4.05 LOCATING

- i. Locate water line at least ten feet away, horizontally, and 18 inches, vertically, from sewer line.
- ii. Do not place water lines in the same trench with sewer lines or electric wiring.
- iii. Whenever it is necessary to deflect pipe from a straight line, either in the vertical or horizontal plane, to avoid obstruction of plumb stems, or where long-radius curves are permitted, the amount of deflection allowed shall not exceed that required for satisfactory making of the joint and comply with the manufacturer's allowable units.

4.06 PLACING AND LAYING

- A. General
 - 1. Lower pipe and accessories into trench by means of derrick, ropes, belt slings, or other equipment approved by the Engineer.
 - 2. Do not dump or drop pipe work materials into the trench.
 - 3. Lay pipe with the bells facing in the direction of laying, except where necessary in making connections to other lines.

4. Rest the full length of each section of pipe solidly on the pipe bed, with recesses excavated to accommodate bells, couplings and joints.
5. Take up and relay pipe that has the grade or joint disturbed after laying.
6. Do not lay pipe in water, or when trench conditions are unsuitable for the work.
7. Securely close open ends of pipe, fittings, and valves when work is not in progress.
8. Where any part of coating or lining is damaged, repair to the approval of the Engineer and at no additional cost to the Owner.
9. All pipe laying shall be in strict accordance with manufacturer's recommendations and installation manual unless otherwise specified.

4.07 JOINTING

A. Asbestos Cement Pipe

1. Install couplings in accordance with AWWA C603.
2. Install heavy couplings for service line connections in accordance with the recommendations of the manufacturer.

4.08 VALVES

- A. Location – Valves shall be located as shown on the Plans and approved by the Engineer.
- B. Valve Boxes and Valve Pits – A valve box shall be provided for every valve. The valve box shall not transmit shock or stress to the valve and shall be centered and plumb over the wrench nut of the valve using a centering disk as manufactured by American Flow Control. The valve box shall be flush with the surface of the finished pavement or such other level as may be directed.

4.09 THRUST BLOCKING

A. General

1. Provide thrust blocks on plugs, caps, tees, and bends deflecting 1 1/4° or more either vertically or horizontally.
2. Provide KDOH Class B concrete for thrust blocking.

B. Installation

1. Prepare trench well or other supporting earth surface by exposing firm undisturbed soil just prior to concrete placement.
2. Place thrust blocks as shown in the typical details with sufficient volume of concrete.
3. Sides of thrust blocking not subject to thrust may be placed against forms.
4. Place thrust blocking so the fitting joints will be accessible for repair.
5. Place polyethylene wrap around fittings, bolts, and glands to prevent exposure to concrete.

4.10 INSPECTING

A. Pressure Piping

1. Closing uninspected work – Do not allow or cause any of the work of this Section to be covered up or enclosed until after it has been completely inspected and tested, and has been approved by the Engineer.

4.11 TESTING & DISINFECTION

A. Scope:

The Contractor shall furnish all materials, equipment, tools and labor necessary to perform all of the tests called for and required herein. The hydrostatic tests shall consist of a pressure test and leakage test. The Contractor may backfill the pipe at his discretion; however, if the pipe has to be repaired it shall be uncovered, repaired and backfilled at no expense to the Owner.

B. Pressure Tests:

1. General. After the trench has been backfilled as specified, all newly laid pipe, or any valved section thereof, shall be subjected to 150 psi pressure test under the supervision of the Engineer and the Water Superintendent.
2. Length of Test. The duration of each pressure test shall be two hours, after reaching 150 psi.
3. Procedure. Each valve section of the pipe shall be slowly filled with water and the specified test pressure applied by means of a pump connected to the pipe in a manner satisfactory to the Engineer. The pump, pipe, connections, gauges and all necessary apparatus shall be furnished by the Contractor. The test connection shall be made at the highest point in the test section or provisions made for pressure differentials due to elevations. The test pressure may not vary ± 2 psi for the duration of the test. Provide pressure gauge with ability to read pressure in increments of 1 psi.
4. Expelling Air. Before applying the test pressure, all air shall be expelled from the pipe. If hydrants or blowoff valves are not available at high places, the Contractor shall make the necessary taps (requires service clamp and corporation stop) at points of highest elevation before the test is made with the approval of the Engineer. These taps shall be left in place and location marked.
5. Defects. Any cracked or defective pipes, fittings, valves or hydrants discovered in consequence of this pressure test shall be removed and replaced by the Contractor with new material in the manner specified and the test shall be repeated until satisfactory to the Engineer.

C. Leakage Test:

1. General. A leakage test shall be conducted concurrently with the pressure test. The duration of each leakage test shall be two hours and during the test, the main shall be subject to 150 psi pressure.
2. Permissible Leakage. Leakage is defined as the quantity of water to be supplied into the newly laid pipe, or any valved section thereof, necessary to maintain the specified leakage test pressure after the pipe has been filled with water and the air expelled.

No pipe installation will be accepted until the leakage is less than the number of gallons per hour as determined by the following schedule:

Allowable Leakage Per 1,000 Feet of Pipeline			
Pipe Size (Inches)	Maximum Loss (Gal./Hr.)	Test Pressure (PSI)	Test Period (Hours)
18	1.66	150	2
12	1.10	150	2
10	0.92	150	2
8	0.74	150	2
6	0.55	150	2

3. Procedure. Each end of the main shall be capped. The main shall then be filled slowly with water by means of a pump connected to the low end of the main. The pump shall be connected to the main in a manner satisfactory to the Engineer. Provisions shall be made at the high end of the main to expel all air from the line. After all air has been expelled from the main, the water pressure in the main shall then be increased gradually to 150 psi. After the pressure has stabilized to 150 psi the test shall begin. Water required to maintain 150 psi shall be withdrawn from a calibrated container. The outlet end of any pressure regulating device shall discharge into the calibrated container in order to accurately determine the actual amount of water required to maintain the required 150 psi water pressure within the test section.

Should any test of the pipe disclose leakage greater than that specified, the Contractor shall, at his own expense, repair the defective joints or sections until the leakage is within the specified allowance.

4. Final Acceptance. No pipe installation will be accepted until the leakage is less than the number of gallons per hour as specified in the above table for the size pipe being tested.

D. Disinfection:

1. All completed water mains, valves, tees, crosses, etc., shall be disinfected in accordance with "AWWA Standard for Disinfecting Water Mains ANSI/AWWA C651-99" and in accordance with the following requirements:
2. The mains shall be thoroughly disinfected before being placed in service by the use of chlorine or chlorine compounds in such amount as to produce a concentration of at least 50 PPM and a residual of at least 25 PPM at the end of 24 hours.
3. The chlorine residual at the end of the 24 hour period will be verified by the Contractor in the presence of the Engineer (or Engineer's representative) and a representative of the County Health Department. If the chlorine residual in the main is less than 25 ppm, the main shall be disinfected again.

4. After the chlorine residual has been verified, the main shall be thoroughly flushed until the chlorine concentration is found to be at levels equal to levels within the surrounding water system. A water sample shall be taken at that time for a bacteria test to be performed by a state certified laboratory. The Contractor will be responsible for sampling and testing at his own expense.
5. All water used in disinfection shall be dechlorinated and approved by the Engineer prior to discharge to surface water or surrounding area.

END OF SECTION

SECTION 15110

VALVES & VALVE ACTUATORS

PART 1 – GENERAL

1.01 GENERAL – This section of the Specifications covers all valves and valve actuators shown on the Project Drawings.

1.02 SUBMITTALS

- A. General – Submit six (6) copies each of the manufacturer’s data sheets and operation and maintenance information as described herein to the Engineer.
- B. Manufacturer’s Data Sheets – Submit manufacturer’s data sheets for each of the products specified herein to the Engineer for approval. Highlight or otherwise distinguish that data that applies specifically to the products subject to approval. Provide certification on each submittal stating that the product information has been reviewed and that the product that will be used in the Work will comply with the requirements of the specifications. Provide date and signature with each certification statement.

1.03 PRODUCT HANDLING

- A. Delivery and Storage – Materials shall be handled in a manner complying with the recommendations of the manufacturer. Materials shall be stored in an organized manner at a location that will not interfere with the Work. Mechanical and Electrical equipment shall be stored in an area protected from the elements in order to exclude moisture.
- B. Protection – Take appropriate measures to protect stored materials from the potential of damage from ongoing activities adjacent to the storage area.
- C. Replacement – Replace materials damaged during shipment, handling, or storage prior to installation. Such replacements shall be made at no additional cost to the Owner.

1.04 WARRANTY

- A. General – All Work associated with this section shall be covered by the standard one year contract warranty in accordance with requirements of the General Conditions.
- B. Equipment – All mechanical and electrical equipment installed as part of the Work shall be covered by a full manufacturer’s warranty for a minimum period of one (1) year after the acceptance of the installation by the Engineer.

PART 2 – MATERIALS AND EQUIPMENT

2.01 GATE VALVES

- A. Use resilient seated gate valves complying with AWWA C509 with a non-rising stem, double O-ring seal stuffing box and iron body with epoxy coated interior surfaces complying with AWWA C550. Working pressure of 250 psi designed to work equally well with pressure on either side of the gate. Use American Darling Series 2500 or approved other.

- B. Oversized Gate Valves: For installations on existing, oversized cast/ductile iron piping, use Mueller Aqua-Grip Valves, or engineer approved other.
- C. Provide connections as required for the piping in which they are installed.

2.02 PLUG VALVES

- A. Provide eccentric plug valves (16" minimum size) of the non-lubricated eccentric type with resilient faced plugs furnished with flanged (above grade) and mechanical joint (below grade) end connections. Flanged valves shall be faced and drilled to the ANSI 125 lb. Standard.
- B. The valve body shall be of ASTM A126 Class B cast iron and shall be furnished with a 1/8" welded overlay seat of not less than 90% pure nickel. Seat area shall be raised with raised surface completely covered with weld to insure that the plug face contacts only nickel. Screwed-in seats shall not be acceptable.
- C. The plug shall be of ASTM A126 Class B cast iron and shall have a cylindrical seating surface eccentrically offset from the center of the plug shaft. The interference between the plug face and body seat, with the plug in the closed position, shall be eternally adjustable in the field with the valve in the line under pressure. Plug shall be Chloroprene (CR) or resilient facing suitable for the application.
- D. The bearings shall have sleeve type metal bearings and shall be of sintered, oil impregnated permanently lubricated type 316 ASTM A743 Grade CF8M. Non-metallic bearings shall not be acceptable.
- E. The shaft seals shall be of the multiple V-ring type and shall be externally adjustable and repackable without removing the actuator or bonnet from the valve under pressure. Valves utilizing O-ring seals or non-adjustable packing shall not be acceptable.
- F. Pressure ratings shall be 175 psi and valve shall be given a hydrostatic and seat test with results being certified.
- G. All valve components shall conform to Underwriters Laboratories classification in accordance with ANSI / NSF Standard 61.
- H. Plug valve shall be PEC Eccentric Plug Valve as manufactured by DeZurik or Engineer approved equal.

2.03 BUTTERFLY VALVES

- A. Provide butterfly valves that meet or exceed the latest revision of AWWA Standard C504 for Class 150B butterfly valves and that meet or exceed the requirements of this specification.
- B. Butterfly valves shall have a working pressure of 200-psi and shall be tested at and shall be capable of withstanding bi-directional line hydrostatic test pressures up to 225-psi without leaking.
- C. All valve components shall conform to Underwriters Laboratories classification in accordance with ANSI/NSF Standard 61.
- D. Valve bodies shall be of cast iron per ASTM A126 Class B. Flange end valves shall be of the short body design with 125 lb. flanged ends faced and drilled per ANSI B16.1

standard for cast iron flanges. Mechanical Joint end valves shall meet the requirements of AWWA C111/ANSI 21.11.

- E. Discs shall be offset to provide an uninterrupted 360 degree seating edge and shall be cast iron per ASTM A48, Class 40C. The disc seating edge shall be solid 316 stainless steel. Sprayed mating seating surfaces are not acceptable. The disc shall be securely attached to the valve shaft utilizing a field removable/replaceable 316 stainless steel torque screw on sizes 3 - 12" (80 - 300mm) or a tangential pin locked in place with a set screw on sizes 14 - 20" (350 - 500mm).
- F. Valve shaft shall be type 304 stainless steel. Valve shaft seals shall be self-compensating V-type packing with a minimum of four sealing rings. One-piece molded shaft seals and o-ring shaft seals are not acceptable.
- G. The seat shall be of Buna-N for water, or as required for other services, and shall be molded in and vulcanized to the valve body. The seat shall contain an integral shaft seal protecting the valve bearings and packing from any line debris. Seats vulcanized to cartridge inserts in the valve body and seats on the disc are not acceptable.
- H. Valve shaft bearings shall be non-metallic and permanently lubricated.
- I. Unless otherwise specified, exterior and interior metallic surfaces of each valve shall be shop painted per the latest revision of AWWA C504. The interior of the body shall have a full rubber lining vulcanized to the valve body. Mechanical Joint valves shall be fully rubber lined to point of pipe insertion. Rubber lining on the flange face and boot style seats are not acceptable.
- J. If the actual valve operating conditions are provided within this specification, the valve actuator shall be sized to the specified conditions. If actual operating conditions are not provided within this specification, per AWWA C504, the valve actuator shall be sized to operate the valve at the rated working conditions of the valve. Each valve and valve actuator shall be assembled, adjusted, and tested as a unit per the latest revision of AWWA C504, by the valve manufacturer. Shop leakage tests shall follow the requirements of AWWA C504 except that the test pressure shall be 225 psi (1550 kPa).
- K. AWWA C504 Butterfly valves shall be DeZURIK BAW or approved equal.
- L. Butterfly valves shall be AWWA Butterfly Valves (BAW) as manufactured by DeZurik or Engineer approved equal

2.04 CHECK VALVES

- A. Provide wafer swing check valves with a spring-assisted closure that minimizes the possibility of water hammer.
- B. The valve body shall be of cast iron complying with ASTM A48
- C. Valve trim shall be 316 stainless steel complying with ASTM A23.
- D. For corrosion resistance the valve shall be Electroless-Nickel Plated.
- E. Wafer swing check valves shall be Series 501A as manufactured by Cla-Val or Engineer approved equal

2.05 ELECTRIC MOTOR ACTUATORS

- A. Basic Actuator – The electric valve actuator shall include the motor, actuator unit gearing, limit switch gearing, limit switches, torque switches, declutch lever, and manual handwheel as a complete self-contained unit. All actuators shall meet the latest revisions of AWWA specifications C504 and C540.
- B. Enclosures – The valve actuator motor and all electrical enclosures shall be NEMA 4 (weatherproof/ watertight) and NEMA 6 temporary submersion (minimum of 3 meters for 48 hours).
- C. Motor – The motor shall be specifically designed for valve actuator service and shall be of high starting torque, totally enclosed, non-ventilated construction. Motor insulation shall be a minimum of NEMA Class F, with a maximum continuous temperature rating of 155 degrees C (rise plus ambient) for the duty cycle specified. Optional insulation classes are available if service conditions warrant.

The motor shall be of sufficient size to open or close the valve at the maximum stated torque. The motor shall be capable of operating at plus or minus 10% of the specified voltage. The motor duty rating shall be sufficient for three complete cycles (open-close-open 3 times) without exceeding its temperature rating. Motor bearings shall be of the anti-friction type, and permanently lubricated.

The motor shall be an independent sub-assembly such that the power gearing shall not be an integral part of the motor assembly, to allow for motor or gear changes dictated by system operation requirements. The motor must be capable of being removed in its entirety for repair and testing. The use of a motor cast integral to the actuator body is not permitted.

The motor shall be equipped with internal thermal contacts to protect against motor overload and the motor shall be equipped with 120-volt AC/DC heaters of 10 watt minimum size.

AC motors shall be rated as a minimum for a 15 minute duty cycle

- D. Power Gearing – The actuator shall be a multiple reduction unit with power gearing consisting of spur, helical, or bevel gears, and worm gearing. The spur, helical, or bevel gearing and worm shall be of hardened alloy steel, and the worm gear shall be alloy bronze. All gearing shall be accurately cut. Non-metallic, aluminum, compressed powdered metal, and cast gearing shall not be allowed. Anti-friction rolling element bearings shall be used throughout and shall support both ends of all rotating parts.
- E. Lubrication – All rotating power train components shall be immersed in grease with provisions for inspection and re-lubrication without disassembly. Lubricants shall be suitable for ambient conditions of minus 20°F to 150°F. Adequate seals shall be provided on all shafting. The use of oil as a lubricant is not permitted.
- F. Self-Locking Feature – Actuator gearing must be self-locking. The use of non-locking gearing and motor brakes is not permitted. The actuator must keep the valve in position with the motor removed without the need for special considerations.
- G. Manual Operation – A metallic handwheel shall be provided for manual operation with an arrow to indicate the open rotation. The handwheel shall not rotate during motor operation. A fused motor shall not prevent manual operation. When in the manual

operating mode, the actuator will remain in this mode until the motor is energized, at which time the actuator will automatically return to electric operation. Movement from motor operation to handwheel operation shall be accomplished by a positive padlockable declutch lever which mechanically disengages the motor and related gearing. It shall be impossible for simultaneous manual and motor operation to occur. Friction type declutch mechanisms are not acceptable. Rim pull on the manual handwheel when the valve is fully seated shall not exceed 80 pounds

- H. Position Limit Switches – Position limit switches and the associated counter gearing shall be an integral part of the valve actuator. Limit switch gearing shall be of the intermittent type, made of bronze or stainless steel, grease lubricated, and totally enclosed to prevent dirt and foreign matter from entering the gear train. Switches shall be adjustable, allowing for trip points from fully open to fully closed positions of valve travel. They shall not be subject to breakage or slippage due to over-travel. Limit switches shall be heavy duty, silver plated with wiping action. The actuator shall have 16 contacts, 4 contacts for each of 4 rotors, all of the same design. Contacts shall be convertible from N/O to N/C in the field. Switch design shall permit visual verification of switch position without disassembly.

Limit switches that rely on the counting of electrical pulses, those that must rely on battery backup, or those that are not mechanical in nature are not permitted.

- I. Torque Switch – Each valve actuator shall be equipped with a switch that will interrupt the control circuit in both the opening and closing directions when valve torque overload occurs or when valves require torque seating in the closed or open position. Contacts shall be silver plated. The torque switch shall have graduated dials for both open and close directions of travel and each shall be independently adjustable, with a positive means to limit the adjustability so as not to exceed the actuator output torque capability.
- J. Control Compartment Heater – The control compartment shall be provided with a 120 volt AC space heater.
- K. Electric Motor Controls – The motor controls are to be supplied integral to the actuator this includes a reversing motor starter, control transformer, and all necessary terminal strips. The control transformer shall have fuses on both primary legs, have a secondary leg grounded, and have a fuse on the other secondary leg. Wiring shall be hard wired point to point without any proprietary circuit boards, plug in components, or other equipment. All points for customer wiring shall go directly to terminal strips. The motor controls are to be readily accessible and completely visible with the electrical compartment cover removed. The intent is to make all controls accessible and simple to understand. All control wiring shall either be labeled at each end or color coded (to match wiring diagram).
- L. Control Station – The actuator shall be equipped with a local close coupled control station. This station will have a 3 position selector switch (open-run-close), 2 LED indicating lights (open-close), and a 3 position padlockable selector switch (local-off-remote).
- M. Modulating Controls – The actuator shall be equipped with a positioning circuit that will position the valve proportionally to a 4 to 20 mA input signal. This device will have adjustments for proportional gain, zero, span, and deadband.

- N. Gearing for Quarter-Turn Valves – The use of bolt on worm gear reducers for quarter-turn valves is required. This gearing will meet the AWWA C540 requirements.
- O. Vendor Responsibility – In the case that an electric actuator is demonstrated to be sized to small; the vendor shall promptly modify the actuator or replace it with a larger unit at no cost to the Owner. If the actuator is shipped separate from the valve or if it is removed during construction, a factory trained service technician employed by the actuator manufacturer or one of the actuator’s formally recognized service facilities shall perform startup and calibration on the equipment at no cost to the Owner. If the actuator is shipped assembled to the valve it shall be calibrated and tested at the valve manufacturer’s facility, the actuator’s manufacturer’s facility, or one of their formally recognized service facilities. All setup and calibration shall be documented and submitted to the Engineer.
- P. Startup – Startup and training by a factory trained service technician employed by the actuator manufacturer or one of their formally recognized facilities will be required at no cost to the Owner.
- Q. Actuator – Electric Actuator shall be a Limitorque L120 series with PTA worm gear or Engineer approved equal.

PART 3 – EXECUTION

- 3.01 INSTALLATION – Install valves and piping in accordance with the manufacturer’s recommendations and industry recognized standards. All piping and valves shall be installed plumbed and leveled. Bolts shall be installed to the proper torque.

END OF SECTION

Standard Sanitary Sewer Bid Item Descriptions

S BYPASS PUMPING This item shall include all labor, equipment, and materials needed to complete a bypass pumping and/or hauling operation for diversion of sewage during sanitary sewer construction. Examples of such operations when bypass pumping and/or hauling may be necessary is during force main tie-ins, manhole invert reconstruction, insertion of new manholes into existing mains, or other similar construction. There may be more than one bypass pumping/hauling operation on a project. This item shall be paid for each separate bypass pumping/hauling operation occurrence as called out on the plans or directed by the engineer and actually performed. There will be no separate bid items defined for length, duration, or volume of sewage pumped or hauled in each occurrence. If a bypass pumping/hauling operation is called out on the plans; but, conditions are such that the bypass pumping/hauling operation is not needed or utilized, no payment will be made under this item. The contractor shall draw his own conclusions as to what labor, equipment, and materials may be needed for each bypass pumping/hauling occurrence. The contractor should be prepared to handle the maximum volume of the sewer being bypassed, even during a storm event. This item shall not be paid separately, but shall be considered incidental, when bypass pumping and/or hauling is needed during cast-in-place-pipe (CIPP) and/or point repair operations. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA).

S CIPP LATERAL SERVICE INVESTIGATION This item shall include all equipment, materials, labor and incidentals necessary to enter the sewer in compliance with all safety/confined space requirements and perform the identification, assessment and pre-measurement of all existing and abandoned laterals for the placement of Cured-In-Place-Pipe lining. This item shall be in payment for all lateral service investigation for all sewer segments to be lined as a part of this contract. This bid item shall include bypass pumping when required. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. Payment for this item shall be LUMP SUM (LS).

S CIPP LATERAL REINSTATEMENT This item is to pay for installing a Cured-In-Place-Pipe liner in service laterals and service/mainline connections to stabilize structural defects and construction inadequacies. This bid item shall include all labor, equipment, materials and incidentals necessary to perform the service lateral reinstatement in accordance with the plans and specifications. Work under this item shall include bypass pumping, sewer flow control, pre-installation cleaning, sealing connections to existing sewer main, pre- and post- construction CCTV inspection and final testing of the CIPP system. This item shall also include the "top hat" required by the specifications. All CIPP lateral reinstatements shall be paid under this item regardless of the size or length of reinstatement. No separate bid items of varying sizes or length of CIPP lateral reinstatement will be provided in the contract. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. Payment for this item shall be EACH (EA) for each CIPP lateral reinstatement complete and ready for use.

S CIPP LINER This bid Item is to pay for rehabilitation of existing sanitary sewers using the Cured-In-Place-Pipe method. This bid item description applies to all CIPP sizes included in the contract.

All CIPP Liner items of all varying sizes shall include all labor, materials, customer notification, testing, necessary permits, ingress and egress procedures, bypass pumping, pre-construction video, sediment and root removal, dewatering, traffic control, erosion and sediment control, excavation pits, removal and replacement of manhole frames and covers as necessary to facilitate the lining work, sealing at manholes and service connections, clearing and grubbing, pipeline cleaning, re-cleaning and video inspection as many times as necessary, debris collection and disposal, root removal, pre- and post-construction video inspection, all digital inspection footage, final report preparation and approval, the cost of potable water from the Owner, required compliance tests, site restoration, site cleanup, sealing of liner at manholes, acceptance testing and all other rehabilitation work and incidentals not included under other pay items necessary to complete the rehabilitation per the plans and specifications. There will be no separate payment for acceptance testing of the lined pipe; but shall be considered incidental to this item. Pay under this item shall be by each size bid in the contract. Pay measurement shall be from center of manhole to center of manhole. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LINEAR FEET (LF).

S CIPP PROTRUDING LATERAL REMOVAL This item includes all equipment, materials, labor and incidentals necessary to enter the sewer in compliance with all safety/confined space requirements, remove a sufficient amount of the protruding tap to insure a proper and safe Cured-In-Place-Pipe lining insertion and perform pre-installation CCTV. This bid item shall include bypass pumping when required. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. Payment for this item shall be EACH (EA) for each protruding lateral removed.

S CONCRETE PIPE ANCHOR This item shall be constructed on the sewer pipe at the locations shown on the plans in accordance with sanitary sewer specifications and standard drawings. Payment for concrete anchors will be made at the contract unit price each in place complete and ready for use. Each concrete anchor of sewer pipe or force main shall be paid under one bid item per contract regardless of the sizes of carrier pipe being anchored in the contract. No separate bid items will be established for size variations. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S DIRECTIONAL BORE Payment under this item is made whenever the plans or specifications specifically show directional boring is to be utilized in order to minimize the impact of open cut for the installation of force main or gravity sewer under streets, creeks, and etc. Payment under this item shall include the specified bore pipe, labor, and equipment. No separate payment shall be made for bore pipe installed in the bore whether used as a carrier pipe or an encasement of a separate carrier pipe. This item shall also include pipe anchors at each end of the bore when specified to prevent the creep or contraction of the bore pipe. Carrier pipe installed within a bore pipe shall be paid separately under pipe items. Payment under this item shall not be size specific and no separate bid items will be established for size variations. The bore pipe sizes to be included under this item shall be as shown on the plans and/or in the specifications. Any and all directional bores in each contract shall be paid under one directional bore bid item included in the contract regardless of size. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LINEAR FEET (LF).

S ENCASEMENT CONCRETE Includes all labor, equipment, excavation, concrete, reinforcing

steel, backfill, restoration, and etc., to construct the concrete encasement of the sewer or force main as shown on the plans, and in accordance with the specifications and standard drawings. Payment under this item shall be in addition to the carrier pipe as paid under separate bid items. Carrier pipe is not included in this bid item. Any and all concrete encasement shall be paid under one bid item included in the contract regardless of the size of the carrier pipe or the volume of concrete or steel reinforcement as specified in the plans and specifications. No separate bid items will be established for size variations. Measurement of pay quantity shall be from end of concrete to end of concrete. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LINEAR FEET (LF) when complete.

S ENCASEMENT STEEL BORED This item shall include the steel encasement pipe size as specified on the plans and in the specifications, casing spacers, end seals, labor, and equipment to bore and install the encasement in accordance with the plans and specifications, complete and ready for use. The size shall be the measured internal diameter of the encasement pipe. The sizes of encasement to be paid under the size ranges specified in the bid items shall be as follows:

- Range 1 = All encasement sizes greater than 2 inches to and including 6 inches
- Range 2 = All encasement sizes greater than 6 inches to and including 10 inches
- Range 3 = All encasement sizes greater than 10 inches to and including 14 inches
- Range 4 = All encasement sizes greater than 14 inches to and including 18 inches
- Range 5 = All encasement sizes greater than 18 inches to and including 24 inches
- Range 6 = All encasement sizes greater than 24 inches

(Encasement sizes of 2 inches internal diameter or less shall not be paid separately; but, shall be considered incidental to the carrier pipe.) Payment under this bid item shall not include the carrier pipe. Carrier pipe shall be paid under a separate bid item. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LINEAR FEET (LF).

S ENCASEMENT STEEL OPEN CUT This item shall include the steel encasement pipe size as specified on the plans and in the specifications, casing spacers, end seals, labor, and equipment to open cut install the encasement in accordance with the plans and specifications, complete and ready for use. The size shall be the measured internal diameter of the encasement pipe. The size encasement to be paid under the size ranges specified in the bid items shall be as follows:

- Range 1 = All encasement sizes greater than 2 inches to and including 6 inches
- Range 2 = All encasement sizes greater than 6 inches to and including 10 inches
- Range 3 = All encasement sizes greater than 10 inches to and including 14 inches
- Range 4 = All encasement sizes greater than 14 inches to and including 18 inches
- Range 5 = All encasement sizes greater than 18 inches to and including 24 inches
- Range 6 = All encasement sizes greater than 24 inches

(Encasement sizes of 2 inches internal diameter or less shall not be paid separately; but, shall be considered incidental to the carrier pipe.) Payment under this bid item shall not include the carrier pipe. Carrier pipe shall be paid under a separate bid item. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LINEAR FEET (LF).

S FORCE MAIN This description shall apply to all PVC and ductile iron and polyethylene/plastic pipe bid items of every size and type, except those bid items defined as "Special". This item includes the pipe specified by the plans and specifications, all fittings (including, but not limited to, bends, tees, reducers, plugs, and caps), tracing wire with test boxes (if required by specification), polyethylene wrap (when specified), labor, equipment, excavation, bedding, restoration, testing, backfill, and etc., required to install the specified new pipe and new fittings at the locations shown on the plans, or as directed, in accordance with the specifications and standard drawings complete and ready for use. No additional payment will be made for rock excavation. This bid item includes material and placement of flowable fill under existing and proposed pavement, and wherever else specified on the plans or in the specifications. This item shall also include pipe anchors on polyethylene pipe runs as shown on the plans or required by the specifications to prevent the creep or contraction of the pipe. Measurement of quantities under this item shall be through fittings, encasements, and directional bores (only when a separate carrier pipe is specified within the directional bore pipe). No separate payment will be made under pipe items when the directional bore pipe is the carrier pipe. Measurements shall be further defined to be to the center of tie-in where new pipe contacts existing pipe at the center of connecting fittings, to the outside face of vault or structure walls, or to the point of main termination at dead ends. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LINEAR FEET (LF).

S FORCE MAIN AIR RLS/VAC VLV This bid item description shall apply to all force main air release/vacuum valve installations of every size except those defined as "Special". This item shall include the air release/vacuum valve, main to valve connecting line or piping, manhole/vault/structure, access casting or doors, tapping the main, labor, equipment, excavation, proper backfill and restoration required to install the air release/vacuum valve at the location shown on the plans or as directed in accordance with the specifications and standard drawings complete and ready for use. All air release/vacuum valves on a project shall be paid under one bid item regardless of size. No separate pay items will be established for size variations. Only in the case of the uniqueness of a particular air release/vacuum valve would a separate bid item be established. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S FORCE MAIN DIRECTIONAL BORE Payment under this item is made whenever the plans or specifications specifically show directional boring is to be utilized in order to minimize the impact of open cut for the installation of sewer or force main under streets, buildings, creeks, and etc. Payment under this item shall include the specified bore pipe, labor, and equipment. No separate payment shall be made for bore pipe installed in the bore whether used as a carrier pipe or an encasement of a separate carrier pipe. This item shall also include pipe anchors at each end of the bore when specified to prevent the creep or contraction of the bore pipe. Carrier pipe installed within a bore pipe shall be paid separately under pipe items. Payment under this item shall not be size specific and no separate bid items will be established for size variations. The bore pipe sizes to be included under this item shall be as shown on the plans and/or in the specifications. Any and all directional bores in each contract shall be paid under one directional bore bid item included in the contract regardless of size. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LINEAR FEET (LF).

S FORCE MAIN POINT RELOCATE This item is intended for payment for horizontal and/or vertical relocation of a short length of an existing main at the locations shown on the plans. This bid item is to be used to relocate an existing force main at point locations such as to clear a conflict at a

proposed drainage structure, pipe or any other similar short relocation situation, and where the existing pipe material is to be reused. The contractor shall provide any additional pipe or fitting material needed to complete the work as shown on the plans and specifications. The materials provided shall be of the same type and specification as those that exist. Substitution of alternative materials shall be approved by the engineer in advance on a case by case basis. New polyethylene wrap is to be provided (if wrap exists or is specified in the specifications to be used). If it is necessary that the pipe be disassembled for relay, payment under this item shall also include replacement of joint gaskets as needed. Bedding and backfill shall be provided and performed the same as with any other pipe installation as detailed in the plans and specifications. Payment under this item shall be for each location requiring an existing main to be relocated horizontally or vertically regardless of pipe size or relocation length. No separate pay items will be established for pipe size variations or relocation segment length variations. Force Main Relocate shall not be paid on a linear feet basis; but shall be paid EACH (EA) at each location when complete and placed in service. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced.

S FORCE MAIN TAP SLEVE/VALVE RANGE 1 OR 2 This item shall include the specified tapping sleeve, valve, valve box, concrete pad around valve box (when required in specifications or plans), labor, and equipment to install the specified tapping sleeve and valve, complete and ready for use in accordance with the plans and specifications. The size shall be the measured internal diameter of the live pipe to be tapped. The size tapping sleeve and valve to be paid under sizes 1 or 2 shall be as follows:

Range 1 = All live tapped main sizes up to and including 8 inches

Range 2 = All live tapped main sizes greater than 8 inches

Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S FORCE MAIN TIE-IN This bid description shall be used for all force main tie-in bid items of every size except those defined as "Special". This item includes all labor, equipment, excavation, fittings, sleeves, reducers, couplings, blocking, anchoring, restoration, testing and backfill required to make the force main tie-in as shown on the plans and in accordance with the specifications complete and ready for use. This bid item shall include purge and sanitary disposal of any sewage from any abandoned segments of force main. Pipe for tie-ins shall be paid under separate bid items. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S FORCE MAIN VALVE This description shall apply to all force main valves of every size required in the plans and specifications, except those bid items defined as "Special". Payment under this description is to be for gate or butterfly force main valves being installed with new force main. This item includes the valve as specified in the plans and specifications, polyethylene wrap (if required by specification), labor, equipment, excavation, anchoring (if any), valve box and valve stem extensions, backfill, concrete pad around valve box (if required by specification), restoration, testing, and etc., required to install the specified valve at the location shown on the plans in accordance with the specifications and standard drawings complete and ready for use. If required on plans and/or proposed adjoining DIP is restrained, force main valves shall be restrained. Force main valve restraint shall be considered incidental to the force main valve and adjoining pipe. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be

referenced. This item shall be paid EACH (EA) when complete.

S FORCE MAIN VALVE BOX ADJUST Includes all labor, equipment, valve box and valve stem extensions (if required), excavation, backfill, concrete pad around valve box (when specified in specifications or plans), restoration, and etc., to adjust the top of the force main valve box to finished grade complete and ready for use. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S LATERAL CLEANOUT This item shall be for payment for installation of a cleanout in a service lateral line. This item shall include furnishing and installation of a tee, vertical pipe of whatever length required, and threaded cap. The cleanout shall extend from the lateral to final grade elevation. The size of the cleanout shall be equivalent to the size of the lateral. The cleanout materials shall meet the same specification as those for the lateral. The cleanout shall be installed at the locations shown on the plans or as directed by the engineer. Only one pay item shall be established for cleanout installation. No separate pay items shall be established for size or height variances. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S LATERAL LOCATE This bid item is to pay for all labor, equipment, and materials needed in locating an existing sanitary sewer service lateral for tie-in of the lateral to new mainline sewers and/or for the relocation of a lateral. This bid item shall be inclusive of any and all methods and efforts required to locate the lateral for tie-in or relocation of the lateral. Locating methods to be included under this items shall include, but are not limited to, those efforts employing the use of video cameras from within an existing sanitary sewer main or lateral, electronic locating beacons and/or tracers inserted into the sanitary sewer main or lateral, careful excavation as a separate operation from mainline sewer or lateral excavation, the use of dyes to trace the flow of a lateral, or any combination of methods required to accurately locate the lateral. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA).

S LATERAL LONG SIDE This bid item description shall apply to all service lateral installations of every size up to and including 6 inch internal diameter, except those lateral bid items defined as "Special". This item includes the specified piping material, main tap, bends, clean outs, labor, equipment, excavation, backfill, testing, and restoration, at the locations shown on the plans or as directed, in accordance with the specifications and standard drawings, complete and ready for use. This bid item is to pay for service lateral installations where the ends of the lateral connection are on opposite sides of the public roadway. The new lateral must cross the centerline of the public roadway to qualify for payment as a long side lateral. The length of the service lateral is not to be specified. Payment under this item shall not be restricted by a minimum or maximum length. The contractor shall draw his own conclusions as to the length of piping that may be needed. Payment under this item shall include boring, jacking, or excavating across the public roadway for placement. Placement of a service lateral across a private residential or commercial entrance alone shall not be reason to make payment under this item. Private or commercial entrances shall not be considered a public roadway in defining payment under this item. No additional payment will be made for rock excavation or for bedding required in rock excavation. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S LATERAL SHORT SIDE This bid item description shall apply to all service lateral installations of every size up to and including 6 inch, except those lateral bid items defined as “Special”. This item includes the specified piping material, main tap tee, bends, clean outs, labor, equipment, excavation, backfill, testing, and restoration, at the locations shown on the plans or as directed, in accordance with the specifications and standard drawings, complete and ready for use. This bid item is to pay for lateral installations where both ends of the lateral connection are on the same side of the public roadway, or when an existing lateral crossing a public roadway will remain and is being extended, reconnected, or relocated with all work on one side of the public roadway centerline as shown on the plans. The length of the service lateral is not to be specified and shall not be restricted to any minimum or maximum length. Payment shall be made under this item even if the lateral crosses a private residential or commercial entrance; but, not a public roadway. Private or commercial entrances shall not be considered a public roadway in defining payment under this item. The contractor shall draw his own conclusions as to the length of piping that may be needed. No additional payment will be made for rock excavation or for bedding required in rock excavation. Please refer to the Utility Company’s Specifications. If the Company does not have specifications, KYTC’s Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S LINE MARKER This item is for payment for furnishing and installing a sewer utility line marker as specified by the utility owner specifications and plans. A line marker may consist of a post or monument of whatever materials specified and shall include markings and/or signage on same as specified by plans or specifications. This item shall include all labor, equipment, and materials needed for complete installation of the marker. This item shall be paid EACH (EA) when complete.

S MANHOLE Payment under this item is for the installation of new 4 foot interior diameter sanitary sewer manhole. Payment for manholes will be made at the contract unit price each in place complete and ready for use at the locations shown on plans in accordance with specifications and standard drawings. Manholes shall include concrete base, barrel sections, cone section or slab top, steps, excavation, backfilling, air testing, restoration, and cleanup in accordance with the specifications and standard drawings. Payment shall be made under this item regardless of whether the base is to be precast or cast-in-place (doghouse). All materials, except casting, shall be new and unused. An existing casting from an existing abandoned or removed manhole is to be reused and shall be considered incidental to this item. When a new casting is specified, or an existing casting is unavailable, it shall be paid as a separate bid item. Anchoring of casting, new or used, shall be considered incidental to this bid item. No additional compensation will be paid for manhole height variations. No additional payment will be made for rock excavation. Please refer to the Utility Company’s Specifications. If the Company does not have specifications, KYTC’s Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S MANHOLE ABANDON/REMOVE Payment under this item is for the partial removal and/or filling of any sanitary sewer manhole regardless of size or depth that no longer serves any purpose. Payment shall be made regardless of whether the manhole is or is not in conflict with other work. Any manhole requiring partial removal, but not total removal, in order to clear a conflict with other work shall be paid under this item. All manholes partially removed shall be removed to a point at least one foot below final grade, one foot below roadway subgrade, or one foot clear of any other underground infrastructure, whichever is lowest. If partial removal of an abandoned manhole is elected by the contractor, the remaining manhole structure shall be refilled with flowable fill. Payment for disposal of a sanitary sewer manhole will be made under this item only. Please refer to the Utility Company’s

Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S MANHOLE ADJUST TO GRADE Payment under this item is for the adjustment of sanitary sewer casting elevation on all sizes of existing sanitary manholes. This work shall be performed in accordance with the sanitary sewer specifications. Payment shall be made under this bid item regardless of the amount of adjustment necessary to a sanitary sewer manhole casting or diameter of the manhole. Work under this pay item may be as simple as placing a bed of mortar under a casting; but, shall also be inclusive of installation of adjusting rings, and /or addition, removal, or replacement of barrel sections. The existing casting is to be reused unless a new casting is specified on the plans. New casting, when specified, shall be paid as a separate bid item. Anchoring of the casting shall be incidental to this item. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S MANHOLE CASTING STANDARD Payment under this bid items is for furnishing of a new standard traffic baring casting for sanitary manholes meeting the requirements of the sanitary sewer specifications and standard drawings. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when installed.

S MANHOLE CASTING WATERTIGHT Payment under this bid item is for furnishing of a new watertight traffic baring casting for sanitary manholes meeting the requirements of the sanitary sewer specifications and standard drawings. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when installed.

S MANHOLE RECONSTRUCT INVERT This bid item is to pay for all labor, equipment, and material for rework of the manhole bench to redirect or eliminate flow, such as when the flow of a pipe or pipes are being removed or redirected. This work will be as specified in the plans, specifications, or directed by the engineer. This work may consist of, but is not limited to, removal of concrete and/or placement of concrete in elimination or redirect of flow. This item shall also include providing and placement of a rubber seal or boot as required by utility specification, standard drawing or plan. The contractor shall draw his own conclusions as to the effort and scope of work needed to comply with the specifications, standard drawings, and plans. No payment shall be made under this bid when MANHOLE TAP EXISTING, or MANHOLE TAP EXISTING ADD DROP are being paid at the same location, as this type of work is included in those items. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S MANHOLE TAP EXISTING This bid item is to pay for all labor, equipment, and material for coring one opening in an existing manhole base, addition of a rubber seal as specified, and rework of the manhole bench to direct the additional pipe flow. The bid item shall be paid for each core opening added to a single manhole. This bid item shall also include any rework of the existing manhole bench due to the elimination of other existing pipes and flow. This work will be as specified in the plans, specifications, or directed by the engineer. This work may consist of, but is not limited to, removal of concrete and/or placement of concrete in the addition, elimination, or redirect of flow. The contractor shall draw his own conclusions as to the effort and scope of work needed to comply with the

specifications, standard drawings, and plans. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S MANHOLE TAP EXISTING ADD DROP This bid item is to pay for all labor, equipment, and material for coring one opening in an existing manhole base, addition of a rubber seal as specified, addition of a vertical drop pipe to the outside of the manhole, placement of reinforcing steel and concrete to encase vertical pipe, and rework of the manhole bench to direct the additional pipe flow. The bid item shall be paid for each drop added to a single manhole. This bid item shall also include any rework of the existing manhole bench due to the elimination of other existing pipes and flow. This work will be as specified in the plans, specifications, or directed by the engineer. This work may consist of, but is not limited to, removal of concrete and/or placement of concrete in the addition, elimination, or redirect of flow. The contractor shall draw his own conclusions as to the effort and scope of work needed to comply with the specifications, standard drawings, and plans. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S MANHOLE WITH DROP Payment under this item is for the installation of new 4 foot interior diameter sanitary sewer manhole with drop. Payment for drop manholes will be made at the contract unit price each in place complete and ready for use at the locations shown on plans in accordance with specifications and standard drawings. Drop manholes shall include concrete base, barrel sections, drop materials, cone section or slab top, steps, excavation, backfilling, air testing, restoration, and cleanup. Payment shall be made under this item regardless of whether the base is to be precast or cast-in-place (doghouse). All materials, except casting, shall be new and unused. An existing casting from an existing abandoned or removed manhole is to be reused and shall be considered incidental to this item. When a new casting is specified, or an existing casting is unavailable, it shall be paid as a separate bid item. Anchoring of casting, new or used, shall be considered incidental to this bid item. No additional compensation will be paid for manhole height variations. No additional payment will be made for rock excavation. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S MANHOLE WITH LINING Payment under this item is for the installation of new 4 foot interior diameter sanitary sewer manhole with corrosion resistant lining. Payment for manholes will be made at the contract unit price each in place complete and ready for use at the locations shown on plans in accordance with specifications and standard drawings. Manholes shall include concrete base, barrel sections, cone section or slab top, steps, lining, excavation, backfilling, air testing, restoration, and cleanup in accordance with the standard drawings. Payment shall be made under this item regardless of whether the base is to be precast or cast-in-place (doghouse). All materials, except casting, shall be new and unused. An existing casting from an existing abandoned or removed manhole is to be reused and shall be considered incidental to this item. When a new casting is specified, or an existing casting is unavailable, it shall be paid as a separate bid item. Anchoring of casting, new or used, shall be considered incidental to this bid item. No additional compensation will be paid for manhole height variations. No additional payment will be made for rock excavation. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S MANHOLE WITH TRAP Payment under this item is for the installation of a new manhole with

trap. Payment for trap manholes will be made at the contract unit price each in place complete and ready for use at the locations shown on plans in accordance with specifications and standard drawings. Trap manholes shall include concrete base, manhole structure and trap materials, cone section or slab top, steps, excavation, backfilling, air testing, restoration, and cleanup. All materials, except casting, shall be new and unused. Payment shall be made under this item regardless of whether the base is to be precast or cast-in-place (doghouse). An existing casting from an existing abandoned or removed manhole is to be reused and shall be considered incidental to this item. When a new casting is specified, or an existing casting is unavailable, it shall be paid as a separate bid item. Anchoring of casting, new or used, shall be considered incidental to this bid item. No additional compensation will be paid for manhole height variations. No additional payment will be made for rock excavation. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S PIPE This description shall apply to all PVC and ductile iron gravity sewer pipe bid items of every size and type 8 inches internal diameter and larger, except those bid items defined as "Special". This item includes the pipe specified by the plans and specifications, all fittings (including, but not limited to, tap tees and couplings for joining to existing similar or dissimilar pipes), polyethylene wrap (if required by specification), labor, equipment, excavation, bedding, restoration, pressure or vacuum testing, temporary testing materials, video inspection, backfill, and etc., required to install the specified new pipe and new fittings at the locations shown on the plans, or as directed, in accordance with the specifications and standard drawings complete and ready for use. This bid item shall include material and placement of flowable fill under existing and proposed pavement, and wherever specified on the plans or in the specifications. No additional payment will be made for rock excavation. Measurement of quantities under this item shall be through fittings and encasements to a point at the outside face of manhole barrels, or to the point of main termination at dead ends or lamp holes. Carrier pipe placed within an encasement shall be paid under this item and shall include casing spacers and end seals. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LINEAR FEET (LF).

S PIPE POINT REPAIR This item is to be used to pay for repair of short lengths of existing sanitary sewer pipe that, through prior video inspection or other means, are known to have pre-existing failure. Pipe Point Repair may be needed in preparation for installation of cured-in-place-pipe (CIPP) lining or other instances where failure is known and repair is prudent. The size of pipe shall not be defined in separate bid items. All diameter sizes of point repair shall be paid under this one item. The materials to be used to make the repair shall be as defined on the plans or in the specifications. This bid item shall include all excavation, pipe materials, joining materials to connect old and new pipe, bedding, and backfill to complete the repair at the locations shown on the plans or as directed by the engineer, complete and ready for use. This bid item shall include bypass pumping when required. Measurement shall be from contact point to contact point of old and new pipe. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LINEAR FEET (LF).

S PUMP STATION This item is for payment for installation of sanitary pump stations including above or below ground structure for housing of the pumps. This item shall include all pumps, piping, fittings, valves, electrical components, building materials, concrete, any other appurtenances, labor, equipment, excavation, and backfill, to complete the pump station installation as required by the plans, standard drawings, and specifications, complete and ready for use. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall

be referenced. This item shall be paid LUMP SUM (LS) for each when complete.

S STRUCTURE ABANDON This item is to be used to pay for abandonment of larger above or below ground sewer structures such as air release/vacuum valve vaults, pump stations, tanks, etc. Payment under this time shall not be limited to size or scope; however structures with connecting pipes of 2 inches or less shall not be paid under this item; but, shall be considered incidental to sewer construction, (i.e., abandonment of standard air release/vacuum valves up to and including 2 inches would not be paid under this item). Payment under this item shall include all labor, equipment, and compacted fill or flowable fill for abandonment of the structure in place and restoration complete. No separate bid items will be established for size or structure variations. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S STRUCTURE REMOVAL This item is to be used to pay for removal of larger above or below ground sewer structures such as air release/vacuum valve vaults, pump stations, tanks, and etc. Payment under this time shall not be limited to size or scope; however, structures with connecting pipes of 2 inches or less shall not be paid under this item; but, shall be considered incidental to sewer construction, (i.e., removal of standard air release/vacuum valves and their structure up to and including 2 inches would not be paid under this item). Payment under this item shall include all labor, equipment, and compacted backfill for removal of the structure and restoration complete. No separate bid items will be established for size or structure variations. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

SECTION 02810

GRAVITY SEWER SYSTEM

PART 1 - GENERAL

1.01 DESCRIPTION

Furnish all materials, equipment, tools, and labor necessary to install gravity sewer systems as shown on the Drawings.

1.02 REFERENCES

Unless otherwise noted, reference is made to the latest version of the documents listed below:

- A. ASTM D3034, Standard Specifications for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings
- B. ASTM D1784, Standard Specifications for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds
- C. ASTM F949, Standard Specification for Poly(Vinyl Chloride) (PVC) Corrugated Sewer Pipe with a Smooth Interior and Fittings
- D. ASTM D2122, Standard Test Method for Determining Dimensions of Thermoplastic Pipe and Fittings
- E. ASTM D2412, Standard Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading
- F. ASTM C478, Standard Specifications for Precast Reinforced Concrete Manhole Sections
- G. Kentucky Department of Highways Standard Specifications for Road and Bridge Construction, Current Edition
- H. ASTM A615, Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
- I. ASTM A139, Standard Specifications for Electric-Fusion (Arc) – Welded Steel Pipe (NPS 4 and Over)
- J. ASTM D4479, Standard Specification for Asphalt Roof Coatings – Asbestos Free
- K. ASTM D2321, Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications
- L. ASTM C1244, Standard Test Method for Concrete Sewer Manholes by the Negative Air Pressure (vacuum) Test Prior to Backfill

- M. The Uni-Bell PVC Pipe Association Handbook of PVC Pipe, Design and Construction, Fourth Edition, August 2001

1.03 QUALITY ASSURANCE

Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this section.

1.04 SUBMITTALS

- A. Submit six (6) copies of product data sheets on material to be used.
- B. Product Data:
 - 1. Materials list of items proposed to be provided under this Section;
 - 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements;
 - 3. Names and addresses of the nearest service and maintenance organization that readily stocks repair parts;
 - 4. Manufacturer's recommended installation procedures which, when approved by the Engineer, will become the basis for accepting or rejecting actual installation procedures used on the Work.

PART 2 - PRODUCTS

2.01 PIPE, FITTINGS, AND ACCESSORIES

- A. Plastic Pipe and Fittings:
 - 1. Pipe – 15” & Smaller Gravity sewer pipe and fittings shall be type PSM Polyvinyl Chloride (PVC) sewer pipe conforming to the requirements of ASTM Specification D3034 for PVC pipe and fittings with a minimum standard dimension ratio (SDR) of 35 unless otherwise noted on the Drawings. The PVC compound used in the manufacture of pipe and fittings shall meet or exceed the requirements for classes 12454-B or 12454-C as defined by ASTM D1784.
 - 2. Pipe – 18” & Larger Gravity sewer pipe shall be Polyvinyl Chloride (PVC) sewer pipe that meets or exceeds the requirements of ASTM D1784 for a minimum cell classification of 12454B or 12454C. The pipe shall be manufactured in accordance with ASTM F679 with a pipe stiffness of 46 psi as tested in accordance with ASTM D2412. Pipe dimensions shall meet the requirements of ASTM F679 when measured in accordance with ASTM D2122. All gravity PVC sewer pipe shall be as manufactured by IM Eagle (or approved equal) unless otherwise noted on the drawings.

3. Joining Systems. Use gravity sewer joints of the rubber gasket type. All joints shall provide a water tight seal. Rubber gaskets shall be marked to indicate nominal pipe sizes and proper insertion direction.

B. Ductile Iron Pipe and Fittings:

1. Pipe – 15” & Smaller DIP Gravity sewer pipe and fittings shall be Class 51 DIP with push on joints in compliance with ANSI A21.51 (AWWA C151).
2. DIP shall be provided with a factory applied PROTECTO 401 ceramic epoxy internal liner (by Induron Protective Coatings) with a bituminous exterior seal coat. Any imperfections in the internal liner shall be repaired as per the liner manufacturer’s recommendations prior to placing the line into service.

2.02 Precast Concrete Manholes. Provide precast concrete manholes and associated materials of the size indicated on the Drawings and meeting the following requirements:

- A. Precast reinforced manholes and related appurtenances conforming with ASTM C 478. Seal manhole joints with "E-Z Stik" plastic gaskets or approved equal. Each gasket shall provide a watertight seal.
- B. Manhole inverts shall be paved as shown on the Drawings upon delivery to the site. Provide a continuous drop in elevation from inlet to outlet unless otherwise shown on the plan/profile sheets.
- C. Make pipe connections to new manholes utilizing PSX Direct-Drive gaskets as manufactured by Press Seal Gasket Corporation (or approved equal) placed into the manhole section as shown on the Drawings. Each rubber gasket connection shall provide a watertight seal.
- D. Use Model No. R-1642 manhole covers as manufactured by the Neenah Foundry Company or an approved equal.
- E. Use steel reinforced plastic manhole steps as manufactured by MA Industries Model PSI-PF or approved equal.
- F. Manholes and lift station structures shall be precast with admixture C-1000 as manufactured by the XYPEX Chemical Corporation. The product shall be applied to the concrete mix at the time of casting and at the rates recommended by the manufacturer. Concrete mix designs incorporating this product shall be submitted to the Engineer for review and approval prior to mix production. The pre-caster shall add a coloring pigment to all manholes containing XYPEX Admixture such that it is readily apparent which structures have been treated.

2.03 Grout. Use a non-shrink, non-metallic grout such as Sonopatch Concrete Repair Compound manufactured by Sonneborn Building Products or approved equal.

2.04 Concrete. Use concrete in conjunction with construction of manholes conforming to the Kentucky Department of Highways, "Standard Specifications For Road And Bridge Construction ", Section 601, for all concrete. Use Class A concrete, 3,500 psi at 28 days, conforming to the following:

Slump	2" to 4"
Air Content	6% ± 2%
Temperature	45° - 90°

2.05 Metal Reinforcement. Use reinforcing steel free from paint, oil, grease, loose scale, dirt, or other substances that would prevent bond between steel and concrete. Use Bars No. 4 and larger conforming in all respects to the requirements of the latest revision of ASTM Specification A 615, Grade 60.

2.06 Steel Casing Pipe:

- (1) Roadways. Install ASTM A139 steel encasement pipe under all highways and where shown on the Drawings where drilling or open cut installation is required for sewer mains. Encasement pipe sized up to 16" shall have a minimum yield strength of 35,000 psi and a minimum thickness of 0.25 inches and shall be thoroughly coated with asphalt bitumen on the outside. Encasement pipe larger than 16" shall be standard strength with wall thickness of 0.375 inches and shall be thoroughly coated with asphalt bitumen on the outside.
- (2) Railroads. Install ASTM A139 steel encasement under all railroad right of way where drilling or open cut is required on the drawings. Encasement pipe 36" diameter shall have a minimum yield strength of 35,000 psi and a minimum nominal wall thickness of 0.500 inches. The exterior of the encasement shall be thoroughly coated with asphalt bitumen.

2.07 Bitumastic Concrete Sealant:

- (1) General. Cover the outside surface of all concrete manholes with a bitumastic sealant upon or before installation and prior to vacuum testing. The sealant shall conform in all respects to ASTM D 4479 and be Pure Asphalt Fibrated Dampproofing as manufactured by Pure Asphalt Company, Inc. or approved other.
- (2) Surface Preparation. Thoroughly clean the concrete surface of all dust, grease, oil, or other foreign particles. Dry the concrete surface prior to dampproofing. If the surface cannot be satisfactorily cleaned, use Pure Asphalt Primer to ensure proper adhesion.
- (3) Application. Apply bitumastic sealant with a wide fiber brush or by light airless spray at a rate of 4 to 6 gallons per 100 square feet.

2.08 XYPEX Concrete Sealant

Where noted on the drawings, the interior of existing structures shall receive two coats of XYPEX concrete sealant as manufactured by the XYPEX Chemical Corporation.

- (1) Coat #1. The first coat shall be XYPEX CONCENTRATE applied by brush in accordance with all manufacturer's recommended application rates and procedures.

- (2) Coat #2. Apply XYPEX MODIFIED following application and curing of Coat #1. Application shall be by brush or spray in accordance with all manufacturer's recommended application rates and procedures.

PART 3 - EXECUTION

- 3.01 Surface Conditions. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.
- 3.02 Handling. Handle pipe without dropping or bumping in a manner to ensure installation in a sound, undamaged condition. Lift pipe with slings or as recommended by the manufacturer. Do not use hooks in contact with joint surfaces. Use equipment for handling that is capable of the required work with an adequate safety factor against overturning or overloading.
- 3.03 Grade and Alignment:
- A. Locate the line as shown on the Drawings to "center" on manholes.
 - B. Use laser equipment for gravity sewer installation to maintain the line and grade of the sewer line. Use targets designed for the size pipe to be installed. Verify the grade of the sewer every 100 feet using conventional leveling techniques.
 - C. Use offset stakes as necessary for the proper installation of manholes.
- 3.04 General:
- A. Conform with the requirements of ASTM D2321 latest revision unless otherwise noted on the drawings or shown herein.
 - B. After the trench is excavated to subgrade as specified, fill the trench to grade with crushed stone as specified to provide a firm and satisfactory bed. Lay pipe of the designated class and required size to form closed joint with the next adjoining pipe, bringing the inverts continuously to the required line and grade shown on the Drawings.
 - C. Commence pipe laying at the lowest point on the line with the spigot or tongue ends placed in the direction of flow.
 - D. Limit joint openings to one-half inch (1/2") for rubber gasket joint and one-fourth inch (1/4") for plastic gasket joints.
 - E. Close all open ends at suspension of day's work with snug fitting closures, and any water accumulated in trench shall be removed prior to removing closure upon resumption of work.
 - F. Use care to prevent lateral displacement during bedding and backfilling.
 - G. Keep all line interiors clear of dirt or other foreign matter as work progresses and after installation.

- 3.05 Pipe Embedment Zone:
- A. Unless otherwise directed by the Engineer, use #9m crushed limestone in compliance with the Kentucky Department of Highways "Standard Specifications for Road and Bridge Construction" and as certified/approved by the Kentucky Transportation Cabinet. Cost for bedding material is considered incidental to the cost of pipe installation.
 - B. Consult with the Engineer regarding bedding and embedment materials when ground water is encountered in the trench.
 - C. Place bedding and embedment materials in accordance with procedures outlined in ASTM D2321.
- 3.06 Joint Locations at Structures. Provide for differential movement between pipe the structure by locating the first joint not more than four (4) inches from structure wall. Embed pipe in concrete from structure wall to first joint.
- 3.07 Road and Drive Crossing. Bore all state highway crossings with steel encasement jacked into place as shown on the Drawings. Where noted on the plans, selected roadways and drives with county or city right of way may be open cut and backfilled with select backfill. Such crossing shall be sequenced to minimize traffic and access impact. Provide the engineers with a traffic control plan for approval to be used with open cut crossings prior to initiating construction.
- 3.08 Manholes. Construct manholes at the proper elevations where shown on the Drawings and conforming with the details shown on the Drawings.
- 3.09 Tie to Existing Manholes. All pipe penetration into existing manholes shall be core drilled and sealed with an appropriately sized PSX direct-drive gasket. All penetrations shall be water tight.

PART 4 - TESTING

- 4.01 Low Pressure Air Test:
- A. General. Conduct a low pressure air test after the trench has been backfilled. Test each section of line between manholes. Furnish the compressor, hose, pipe, connections, gauges, and measuring devices and all other necessary apparatus, and furnish all necessary assistance to conduct the test.
 - B. Procedure. Plug all pipe openings with pipe plugs after the test section has been cleaned. The air temperature in the test section should be between 45 degrees and 95 degrees Fahrenheit and the interior of the pipe surface should be wet immediately prior to installation of plugs. Pressurize the pipe section to a pressure between 4 psig and 3.5 psig and allow time for the pressure to stabilize. When the pressure has stabilized and is at least 3.5 psig, record the time required for the pressure to drop 0.5 psi. The minimum allowable time intervals for this 0.5 psi drop for plastic pipe at standard length of 400' between manholes are as follows:

PVC PIPE SIZE (INCHES)	TIME	TIME FOR LONGER LENGTH, SECONDS
4	1 minute 53 seconds	0.190*L
6	2 minutes 50 seconds	0.427*L
8	5 minutes 04 seconds	0.760*L
10	7 minutes 54 seconds	1.187*L
12	11 minutes 24 seconds	1.706*L
15	17 minutes 48 seconds	2.671*L
18	25 minutes 38 seconds	3.846*L
24	45 minutes 35 seconds	6.837*L
30	71 minutes 13 seconds	10.683*L

*Note - If distances between manholes exceeds 400', use the table noted as "Time for Longer Lengths" to calculate the allowable time associated with a pressure drop of 0.5 psi. As a function of length, (L) between manhole, L - in feet.

Should any test of the pipe disclose a pressure drop greater than that specified in the referenced time frame, the Contractor shall, at his own expense, repair the defective joints or sections until the pressure drop is within the specified allowance.

C. Final Acceptance. No pipe installation will be accepted until the pressure drop is less than the pressure drop in the above table for the size pipe being tested.

4.02 Lamp Test. Perform the lamp test as directed by the Engineer to verify the accuracy of alignment of the installed sewer and that the sewer is free of debris and obstructions. The lamp test shall be performed following the placement of at least one (1) foot of backfill over the section of sewer to be tested. The segment of sewer shall be visually lamped with lights or mirrors. Visually inspected the line at the manhole opposite of the manhole which is being illuminated. The full diameter of the pipe in respect to the vertical axis should be visible and a minimum 7/8 of the diameter of the pipe in respect to the horizontal axis should be visible when viewed. Remove and relay segments of sewer not meeting the requirements mentioned above.

4.03 Deflection Test. Perform the deflection test along the installed sewer alignment no less than 30 days following complete trench backfill. The test shall be performed by pulling an Engineer approved deflection gauge or mandrel through the segment of sewer being tested. The dimensions of the mandrel shall be in accordance with Table 10.14 or Table 10.15 as presented in the Uni-Bell Handbook of PVC pipe, 4th Ed. This test shall be considered a "go-no go" test in which segments that do not allow passage of the mandrel shall be removed and reconstructed. Following reconstruction, retest the segment for deflection.

4.04 Manhole Vacuum Test. Perform the vacuum test conforming to the preparation and procedure as outlined in the most recent edition of the ASTM designation C 1244 (Standard Test Method For Concrete Sewer Manholes by the Negative Air Pressure (Vacuum) Test) and more generally described as follows:

A. Properly brace and plug all lift holes and pipes leading into and out of the manhole.

- B. Drain a vacuum of ten (10) inches of Mercury (4.9 psi) on the manhole. Close the valve on the vacuum line of the test head and shut off the vacuum pump.
- C. Measure the time for the vacuum pressure to drop to nine (9) inches of Mercury.
- D. The manhole vacuum test shall be considered passed if the time required for the pressure to drop from ten (10) inches of Mercury (4.9 psi) to nine (9) inches Mercury (4.4 psi) exceeds the time specified in Table 1 of ASTM C 1244 and the table listed below:

MINIMUM TEST TIMES FOR VARIOUS MANHOLE DIAMETERS									
Diameter, Inches									
	30	33	36	42	48	54	60	66	72
Depth	Time (seconds)								
8	11	12	14	17	20	23	26	29	33
10	14	15	18	21	25	29	33	36	41
12	17	18	21	25	30	35	39	43	49
14	20	21	25	30	35	41	46	51	57
16	22	24	29	34	40	46	52	58	67
18	25	27	32	38	45	52	59	65	73
20	28	30	35	42	50	53	65	72	81
22	31	33	39	46	55	64	72	79	89
24	33	36	42	51	59	69	78	87	97
26	36	39	46	55	64	75	85	94	105
28	39	42	49	59	69	81	91	101	113
30	42	45	53	63	74	87	98	108	121

- E. If the manhole fails the initial test, make necessary repairs by a method approved by the Engineer. Retest the manhole until a satisfactory test result is obtained.

RIVERCREST ENGINEERING, INC.
LAMP TEST DATA SHEET

Test No. _____

Identification of Pipe Installation (Job name, location, contract number, etc.) _____

Field Test Data: (To be filled in by the Inspector).				
Date: _____				
Identification of Pipe Material Installed _____				
Pipe Under Test				
Upstream MH sta #	Downstream MH sta #	Dia. D (in.)	Length L (ft.)	Pass or Fail (P or F)
Inspector's Name and Title: _____				
Signature of Inspector: _____				
If a section fails, the following items should be completed:				
Identify section(s) that failed: _____				
Description of corrective action taken: _____				

For test results after repair refer to Test No. _____ Inspector _____				

**RIVERCREST ENGINEERING, INC.
AIR TEST DATA SHEET**

Test No. _____

Identification of Pipe Installation (Job name, location, contract number, etc.) _____

Field Test Data: (To be filled in by the Inspector).
Date: _____ Specified Maximum Pressure Drop: _____psig
Identification of Pipe Material Installed _____

Pipe Under Test				Specification Time	Field Test Operations Data					
Upstream MH sta #	Downstream MH sta #	Dia. D (in.)	Length L (ft.)	Refer to Table 1 (min:sec)	Pressure Initially Raised to (psig)	Time Allowed for Pressure to Stabilize (min)	Start Test Pressure (psig)	Stop Test Pressure (psig)	Elapsed Time (min:sec)	Pass or Fail (P or F)

Inspector's Name and Title: _____ Signature of Inspector: _____

If a section fails, the following items should be completed:
Identify section(s) that failed:

Leak (was) (was not) located. Method used:

Description of leakage found:

Description of corrective action taken:

For test results after repair refer to Test No. _____ Inspector _____

RIVERCREST ENGINEERING, INC.
MANHOLE VACUUM TEST

ASTM DESIGNATION C1244 DATA SHEET

Test No. _____

Identification of Manhole (Job name, location, contract number, etc.)

Field Test Data: (To be filled in by the Inspector).

Date: _____ Specified Maximum Pressure Drop: _____psig

Identification of Manhole Installed

Pipe Under Test				Specifica- tion Time	Field Test Operations Data					
Manhole MH sta #	Dia. D (in.)	Length H (ft.)	Refer to Table 1 (sec)	Vacuum Initially Raised To (mercury)	Time Allowed for Vacuum to Stabilize (sec)	Start Test Vacuum (mercury)	Stop Test Vacuum (mercury)	Elapsed Time (sec)	Pass or Fail (P or F)	

Inspector's Name and Title: _____

Signature of Inspector: _____

If a manhole fails, the following items should be completed:

Identify manhole(s) that failed:

Leak (was) (was not) located. Method used:

Description of leakage found:

Description of corrective action taken:

For test results after repair refer to Test No. _____ Inspector _____

RIVERCREST ENGINEERING, INC.
DEFLECTION TEST DATA SHEET

Test No. _____

Identification of Pipe Installation (Job name, location, contract number, etc.)

Field Test Data: (To be filled in by the Inspector).

Date: _____

Identification of Pipe Material Installed

Pipe Under Test

Upstream MH sta #	Downstream MH sta #	Dia. D (in.)	Length L (ft.)	Pass or Fail (P or F)

Inspector's Name and Title: _____

Signature of Inspector: _____

If a section fails, the following items should be completed:

Identify section(s) that failed: _____

Description of corrective action taken: _____

For test results after repair refer to Test No. _____ Inspector _____

SECTION 02835

SEWER MANHOLE REHABILITATION

PART 1 - SCOPE

This section of the specifications provides for all aspects of manhole rehabilitation and sealing using various procedures either singularly or in combination.

PART 2 - GENERAL

2.01 Sewer manhole rehabilitation includes the following:

- A. Sealing, plugging, patching, and coating of the manhole structure, including chimney, corbel/cone, wall, and base with mortars, coatings and sealants to improve the surface condition, eliminate infiltration, and provide corrosion protection.
- B. Lining and structural enhancement of the manhole by applying a monolithic fiber reinforced cementitious liner.
- C. Repair or rebuilding of the manhole bench, or of the manhole chimney and corbel to improve structural condition when excavation is required.
- D. Removal and/or replacement of unsound and missing steps.
- E. Reinstallation or replacement of manhole frames and covers for grade adjustment, frame alignment, or inflow elimination.
- F. Elimination of infiltration/inflow under the manhole frame.
- G. Elimination of inflow through and around manhole covers.

PART 3 - QUALITY ASSURANCE

Sewer manhole rehabilitation work shall be performed by personnel trained in the proper mixing and application of the products specified herein. The contractor shall furnish the Engineer with training certificates for personnel responsible for application of the manhole rehabilitation products specified herein.

PART 4 - SUBMITTALS

Submit six (6) copies of the following:

Manufacturer's technical data for products proposed for use in conjunction with this section of work.

Manufacturer's recommended installation or application procedures.

Training certificates for personnel.

PART 5 - MATERIALS

5.01 The materials used for manhole sealing, plugging, and patching shall be designed, manufactured, and intended for sewer manhole rehabilitation and the specific application in which they are used. The materials shall have a proven history of performance in sewer manhole rehabilitation. The materials shall be delivered to the job site in original unopened packages and clearly labeled with the manufacturer's identification and printed instructions. All material shall be stored and handled in accordance with recommendations of the manufacturer and the American Concrete Institute.

A. Cement Plugging

The grout used to plug active infiltration shall be a rapid set hand mixed and hand applied cementitious product with set modifiers and other additives. The plugging mix shall be formulated with calcium silicate, calcium aluminate cements, mineral filler, and specially selected chemical additives for set control. The plugging mix is to be applied according to manufacturer's recommendations, and shall meet the following physical property requirements:

Compressive Strength [ASTM C-109]:	1 hr:	>1,000 psi
	24 hr:	>2,500 psi
	28 days:	5500-6000 psi

Expansion [ASTM C-827]:	1 day:	0.10%
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Pull Out Strength [ASTM C-234]:	14,000 lb #4 rebar imbedded 5-1/2@ in 1@ diameter cement pocket
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Sulfate Resistance [ASTM C-267]:	No weight loss after 15 cycles, immersed in 2000 ppm sulfuric acid, test continuing
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Freeze/Thaw Resistance [ASTM C-666, Method A]:	98 cycles
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Set Time [ASTM C-191]:	<60 sec
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The plugging mix shall be Strong-Plug as manufactured by Strong-Seal® Systems, Corp., or approved equal.

B. Cement Patching

The grout used for filling interior voids shall be a rapid set hand mixed and hand applied cementitious product with set modifiers. The patching mix shall be formulated with calcium aluminate cement, specially selected chemical additives, and fiber reinforcement. The patching mix is to be mixed and applied according to manufacturer's recommendations, and shall meet the following physical property requirements:

Compressive Strength [ASTM C-109]:	15 min:	200 psi
	1 hr:	>1,800 psi
	24 hr:	>2,600 psi

Shrinkage [ASTM C-596]: 0% at 90% relative humidity

Bond Strength [ASTM C-882]: 28 day: >1,600 psi

Mix Ratio (by volume): 1 part water to 3 parts patching mix

Mix Time: hand mix only-maximum, 1 min

Wet Density: 105 pcf, ± 5 pcf

Placement Time: 5-10 min

Flow Release: 15-30 min after placement

The patching mix shall be Strong-Seal® QSR as manufactured by Strong-Seal® Systems, Corp., or approved equal.

C. Monolithic Liner

The liner material used for manhole sealing shall be a rapid set spray applied cementitious product. The liner shall be formulated with calcium aluminate cement and consist of a blend of acid resistant binders, pozzolanic materials, silicious aggregates, fiberglass rods and other additives.

Each manhole to be lined shall be evaluated in the field to determine the type of liner to be applied. Any manhole noted by the Contractor and/or Inspector to require the use of high sulfate resistance materials shall be approved by the Engineer/Owner prior to application. The liner shall be impervious to the flow of water, resistant to sulfide attack, and shall restore structural integrity to existing substrates, and shall meet the following physical property requirements:

1. Base Condition:

Compressive Strength [ASTM C-109]:	28 day:	> 9,000 psi
Tensile Strength [ASTM C-496]:	28 day:	> 800 psi
Flexural Strength [ASTM C-293]:	28 day:	> 1,200 psi
Shrinkage [ASTM C-596]:	0% when cured @ 90% relative humidity	

Freeze/Thaw [ASTM C-666 (Method A)]: No visual damage after 100 cycles
Sulfate Resistance [ASTM C-267]: For use in environments with pH levels 3.0
or higher
Water/Cement Ratio: 0.36 to 0.45

Bond Strength [ASTM C-882]: 28 day: >2,000 psi

The lining material shall be Strong-Seal® MS-2A as manufactured by Strong-Seal® Systems, Corp., or approved equal.

2. High Sulfate Resistance Condition:

Compressive Strength [ASTM C-109]: 28 day: > 9,000 psi
Tensile Strength [ASTM C-496]: 90 day: > 800 psi
Flexural Strength [ASTM C-78]: 90 day: > 1,500 psi
Bond Strength [ASTM C882] 28 day: > 3,000 psi
Shrinkage [ASTM C-596]: 0% when cured @ 90% relative humidity
Freeze/Thaw [ASTM C-666 (Method A)]: No visual damage after 100 cycles
Sulfate Resistance [ASTM C-267]: For use in environments with pH levels 1.0
or higher

The lining material shall be Strong-Seal® High Performance Mix or approved equal.

PART 6 - EQUIPMENT

Equipment used to mix and apply the lining material shall meet the requirements and specifications of the manufacturer.

PART 7 - MIXING

For each bag of product, the amount of water used shall be as specified by the manufacturer and mixing shall be done using the approved equipment. Material shall be placed into the mixing hopper with such timing so that the liner can be sprayed continuously without interruption until each application is complete.

PART 8 - APPLICATION

All materials shall be mixed and applied in accordance with the manufacturer's written instructions.

8.01 Cleaning: All concrete and masonry surfaces must be clean. Grease, laitance, loose bricks, mortar, unsound concrete, and other materials must be completely removed. Water blasting utilizing proper nozzles shall be the primary method of cleaning; however, other methods such as wet or dry sandblasting, acid wash, concrete cleaners, degreasers or mechanical means may be required to properly clean the surface. Surfaces on which these other methods are used shall be thoroughly rinsed, scrubbed, and neutralized to remove cleaning agents and their reactant products.

8.02 Preparation for Manhole Sealing: After cleaning, the manhole interior surface shall be prepared for sealing. Loose or missing brick shall be removed and replaced, actively leaking areas plugged, and voids patched. Any patching and/or

plugging materials shall be deemed compatible with the lining material used for sealing the manhole as determined by the manufacturers. Actively leaking areas shall be plugged with grout conforming to the requirements of paragraph 5.01.A of this section. Holes (including holes left after removing steps), voids, and cracks shall be patched with grout conforming to the requirements of paragraph 5.01.B of this section.

- 8.03 Manhole Sealing with Cement Manhole Liner: Prior to application (spraying) of the lining material, the entire manhole surface shall be clean and free of foreign material, and damp without noticeable free water droplets or running water, but totally saturated. The material shall be sprayed from the bottom of the wall to the top of the manhole to form a coating of uniform thickness sufficient to insure that all cracks, crevices, and voids are filled and a relatively smooth surface remains after light troweling. The light troweling shall compact the materials into voids and crevices and set the bond onto the manhole interior surface.

After the first application has taken an initial set (disappearance of surface sheen which could be 15 minutes to 1 hour depending upon ambient conditions), a second application shall be made again from the bottom up to assure a minimum thickness of 1-inch. The surface shall be troweled to a smooth finish, with care taken to not over-trowel so as to bring additional water to the surface and thereby weaken the finished liner.

The bench shall be sprayed in such a manner to produce a bench having a gradual slope from the wall/bench intersection to the invert. Material at the wall/bench intersection shall be built up and rounded to produce a uniform radius at the circumference of the intersection. The thickness of the lining material shall be no less than 1/2-inch on the bench at the invert, and shall increase in the direction of the wall to provide the required slope as shown on the Standard Details.

PART 9 - CURING

Caution shall be taken to minimize exposure of the applied lining to sunlight and air movement. If the second application is to be made longer than 15 minutes after completion of the first application, the substrate shall be covered. At no time shall the finished product be exposed to sunlight or air movement for longer than 15 minutes before replacing the manhole cover.

The final application shall have a minimum of four (4) hours cure time before being subjected to active flow. Traffic shall not be allowed over substrates for 24 hours after lining is complete.

PART 10 – BENCH REPAIRS

Bench repairs shall be performed at those manholes noted on the project plans. Any manhole inspected by the Contractor and deemed to require bench repair work shall be

approved by the Owner or Engineer prior to performing the work.

Bench repair work shall include but not be limited to the following:

- (a) Controlling sewer flow through manhole as required to perform the work.
- (b) Cleaning the existing surface to remove loose materials and debris prior to performing work.
- (c) Adding necessary materials to promote channelized, smooth flow across the manhole bench and to prevent collection of sewer wastes on bench.
- (d) All bench repair work shall be performed prior to manhole lining operations.

PART 11 – CASTING REPLACEMENTS & INFLOW DISHES

11.01 Casting Replacements: The following procedure shall be carried out for each manhole noted for casting replacement on the project plans.

- (a) Measure the existing manhole and casting as needed to ensure safety and a positive seal for the new casting.
- (b) Unless otherwise noted on the Plans, replace the existing casting with Model R-1736-A as manufactured by Neenah Foundry Company, or engineer approved equal.
- (c) Return the existing casting to the Owner.

11.02 Inflow Dishes: The following procedure shall be carried out for each manhole noted for inflow cover on the Plans.

- (a) Measure the existing manhole casting as required by the inflow dish manufacturer to ensure a positive seal for the new casting.
- (b) Clean the existing casting prior to measuring and installation of the inflow dish to ensure a good fit.
- (c) Install Cretex Inflow Dish, as manufactured by Cretex Specialty Products, or engineer approved equal.

PART 12 - PRODUCT TESTING

Three (3) 2-inch cubes shall be cast each day from every product used, and shall be properly labeled and sent to the manufacturer or an approved laboratory for testing in accordance with the manufacturer's directions. The manufacturer or laboratory shall perform compressive strength testing as described in ASTM C-109.

PART 13 – WARRANTY

All work associated with this section shall be covered by a two year contract warranty against defective materials or workmanship.

PART 14 - MANHOLE INSPECTIONS & TESTING

14.01 Manholes that have undergone rehabilitation shall be inspected after completion and within the guarantee period. Leakage and other defects resulting from the Contractor's work shall be eliminated and repaired by the Contractor as required by the Engineer, at the Contractor's expense.

14.02 Manholes that have been rehabilitated utilizing full-depth, spray applied cementitious manhole lining products, shall be subjected to vacuum testing as per ASTM C1244-93. Vacuum testing shall not be conducted earlier than 7 days after application of products. Any manhole which does not pass the vacuum test shall be repaired by the Contractor at no additional expense to the Owner and shall be retested. No installation shall be accepted until the vacuum test is successful.

PART 15 - WEATHER

No application of liner shall be made to surfaces with ambient temperature, 40°F or if freezing is expected to occur inside the substrate within 24 hours after the application. If ambient temperatures are in excess of 95 degrees Fahrenheit, precautions shall be taken to keep the mix temperature at the time of application below 80 degrees Fahrenheit. Mix water temperature shall not exceed 85 degrees Fahrenheit. Chill water with ice, if necessary.

END OF SECTION

SECTION 03001

MANHOLE GRADE ADJUSTMENT

PART 1 – GENERAL

1.01 MANHOLE GRADE ADJUSTMENT RINGS

All grade adjustments of manhole frame and cover assemblies shall be completed utilizing brick and mortar, reinforced concrete grade rings, or injection molded High Density Polyethylene (HDPE) adjustment rings as manufactured by Ladtech, Inc. or approved equal. Existing manholes shall be adjusted no more than 18" utilizing adjustment rings.

Following installation of adjustment rings or brick, the internal circumference of the raised section (from the interface with the manhole corbel through the casting joint) shall be sealed with a non-shrink grout or cement. If the manhole is located in a non-traffic area and the final grade of the casting is greater than 4" above finished grade, the Contractor shall also seal the outer circumference of the manhole with a non-shrink grout or cement.

A. Reinforced Concrete Grade Adjustment Rings

1. Precast reinforced concrete grade adjustment rings shall conform to ASTM C478 and shall be free from cracks, voids, and other defects.
2. The adjustment rings shall be tested to assure compliance with impact and loading requirements per AASHTO's Standard Specification for Highway Bridges.
3. Installation shall be according to manufacturer's recommendations and the following procedure:
 - a. Clean the concrete cone or top slab with a whiskbroom or chisel to assure a flat seating surface free of rocks, gravel, blacktop and protruding concrete, frozen or other debris.
 - b. Measure the distance from the cone or top slab to the projected finish grade and deduct for the cover frame. Determine the net buildup of rings necessary to come within ¼" of grade with the cover frame in place.

- c. Determine the best ring height combination to attain necessary adjustment.
- d. Use mortar to create a flat sealable surface if the cone or top slab is too badly chipped or damaged to attain a good seal. Apply two strips of approved butyl gasket material to the cone or top slab around the entire circumference, overlapping the ends.
- e. Place the first ring down onto the cone or top slab.
- f. Apply two strips of approved butyl gasket material to the top of the first grade ring around the entire circumference, overlapping the ends.
- g. Place the second ring down onto the first ring.
- h. Continue the assembly per steps f and g for each adjustment ring being used. A maximum height of 18" is permitted for adjustment rings.
- i. Prior to setting the cover frame in place, apply two strips of approved butyl gasket material to the last rings around the entire circumference, overlapping the ends.
- j. Set the cover frame in place, centered on the top ring.
- k. Where the manhole is located in pavement, use precast concrete rings in conjunction with HDPE rings to match the roadway cross slope.

1.02 HIGH DENSITY POLYETHYLENE GRADE ADJUSTMENT RINGS

- A. Plastic adjustment rings shall be manufactured from Polyethylene plastic as identified in ASTM D1248 (Standard Specification for Polyethylene Plastic Molding and Extrusion Materials). Material properties shall be tested and qualified for usage per the ASTM Test Methods reference in ASTM D1248. Recycled material meeting the above requirement may be used.
- B. Plastic adjustment rings shall be manufactured utilizing the injection molding process as defined by the Society of Plastic Engineers (SPE).

- C. The adjustment rings shall be tested to assure compliance with impact and loading requirements per AASHTO's Standard Specification for Highway Bridges. Adjustment rings shall be tested and accepted for HS-25 loading.
- D. Installation shall be according to manufacturer's recommendations and the following procedure:
1. Clean the concrete cone or top slab with a whiskbroom or chisel to assure a flat seating surface free of rocks, gravel, asphalt, protruding concrete, frozen or other debris.
 2. Measure the distance from the cone or top slab to the projected finish grade and deduct for the cover frame. Determine the net buildup of rings necessary to come within ¼" of grade with the cover frame in place.
 3. Determine the best ring height combination to attain necessary adjustment. Molded slope rings shall be used to match grades of paved surfaces that are not flat. Molded slope rings shall be used to accommodate other grades that are not flat only when directed by the Engineer.
 4. Dry stack rings on cone. Index any slope rings as necessary. Place cover frame casting on top of the assembly and verify height and slope match.
 5. Mark the entire stack with a vertical line and disassemble.
 6. Use mortar to create a flat sealable surface if the cone or top slab is too badly chipped or damaged to attain a good seal. Apply a 3/8" of approved butyl rope to the cone or top slab. (A 1" x 1" butyl material strip should be used if the cone is rough or irregular).
 7. Place the first ring down onto the cone or top slab with the male lip into the opening, aligning the vertical line.
 8. Apply a 3/8" bead of approved butyl rope on the bottom of the next ring, as close to the male lip as possible around the entire 360° of the ring.
 9. Place the second ring down onto the first ring with the male lip interlocking into the center, aligning the vertical line.

10. Continue the assembly per steps 8 and 9 for each adjustment ring being used. A maximum height of 18" is permitted for adjustment rings.
 11. Prior to setting the cover frame in place, apply 1 – 1" by 1" inch bead of approved butyl sealant on top of the last ring. Apply the sealant in a location to contact the cover frame the full 360°.
 12. Set the cover frame in place, centered on the top ring. Apply sufficient butyl rubber to achieve 10" vacuum test if required.
- E. All HDPE adjustment rings shall be covered by a full two year warranty that warrants the adjustment rings for two years from the date of installation against defects in materials. Any defective adjustment rings shall be replaced at no cost to the Owner.

END OF SECTION

PART II
SPECIFICATIONS AND STANDARD DRAWINGS

SPECIFICATIONS REFERENCE

Any reference in the plans or proposal to previous editions of the *Standard Specifications for Road and Bridge Construction* and *Standard Drawings* are superseded by *Standard Specifications for Road and Bridge Construction, Edition of 2019* and *Standard Drawings, Edition of 2016*.

SUPPLEMENTAL SPECIFICATIONS

The contractor shall use the Supplemental Specifications that are effective at the time of letting.
The Supplemental Specifications can be found at the following link:

<http://transportation.ky.gov/Construction/Pages/Kentucky-Standard-Specifications.aspx>

PART III

EMPLOYMENT, WAGE AND RECORD REQUIREMENTS

FHWA-1273 -- Revised May 1, 2012

**REQUIRED CONTRACT PROVISIONS
FEDERAL-AID CONSTRUCTION CONTRACTS**

- I. General
- II. Nondiscrimination
- III. Nonsegregated Facilities
- IV. Davis-Bacon and Related Act Provisions
- V. Contract Work Hours and Safety Standards Act Provisions
- VI. Subletting or Assigning the Contract
- VII. Safety: Accident Prevention
- VIII. False Statements Concerning Highway Projects
- IX. Implementation of Clean Air Act and Federal Water Pollution Control Act
- X. Compliance with Governmentwide Suspension and Debarment Requirements
- XI. Certification Regarding Use of Contract Funds for Lobbying

3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.

4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor performed by convicts who are on parole, supervised release, or probation. The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors.

ATTACHMENTS

A. Employment and Materials Preference for Appalachian Development Highway System or Appalachian Local Access Road Contracts (included in Appalachian contracts only)

II. NONDISCRIMINATION

The provisions of this section related to 23 CFR Part 230 are applicable to all Federal-aid construction contracts and to all related construction subcontracts of \$10,000 or more. The provisions of 23 CFR Part 230 are not applicable to material supply, engineering, or architectural service contracts.

I. GENERAL

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under Title 23 (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services).

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR 60, 29 CFR 1625-1627, Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The applicable requirements of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

The contractor and all subcontractors must comply with: the requirements of the Equal Opportunity Clause in 41 CFR 60-1.4(b) and, for all construction contracts exceeding \$10,000, the Standard Federal Equal Employment Opportunity Construction Contract Specifications in 41 CFR 60-4.3.

Form FHWA-1273 must be included in all Federal-aid design-build contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services). The design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including 41 CFR 60, and 29 CFR 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), and Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

Contracting agencies may reference Form FHWA-1273 in bid proposal or request for proposal documents, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract).

The following provision is adopted from 23 CFR 230, Appendix A, with appropriate revisions to conform to the U.S. Department of Labor (US DOL) and FHWA requirements.

2. Subject to the applicability criteria noted in the following sections, these contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.

1. Equal Employment Opportunity: Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630, 29 CFR 1625-1627, 41 CFR 60 and 49 CFR 27) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under

this contract. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the contracting agency and the Federal Government to ensure that it has made every good faith effort to provide equal opportunity with respect to all of its terms and conditions of employment and in their review of activities under the contract.

b. The contractor will accept as its operating policy the following statement:

"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre-apprenticeship, and/or on-the-job training."

2. EEO Officer: The contractor will designate and make known to the contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active EEO program and who must be assigned adequate authority and responsibility to do so.

3. Dissemination of Policy: All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.

b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minorities and women.

d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

4. Recruitment: When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minorities and women in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minorities and women. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority and women applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, the contractor is expected to observe the provisions of that agreement to the extent that the system meets the contractor's compliance with EEO contract provisions. Where implementation of such an agreement has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Federal nondiscrimination provisions.

c. The contractor will encourage its present employees to refer minorities and women as applicants for employment. Information and procedures with regard to referring such applicants will be discussed with employees.

5. Personnel Actions: Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with its obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of their avenues of appeal.

6. Training and Promotion:

a. The contractor will assist in locating, qualifying, and increasing the skills of minorities and women who are

applicants for employment or current employees. Such efforts should be aimed at developing full journey level status employees in the type of trade or job classification involved.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of employees who are minorities and women and will encourage eligible employees to apply for such training and promotion.

7. Unions: If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use good faith efforts to obtain the cooperation of such unions to increase opportunities for minorities and women. Actions by the contractor, either directly or through a contractor's association acting as agent, will include the procedures set forth below:

a. The contractor will use good faith efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minorities and women for membership in the unions and increasing the skills of minorities and women so that they may qualify for higher paying employment.

b. The contractor will use good faith efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.

c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the contracting agency and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minorities and women. The failure of a union to provide sufficient referrals (even though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the contracting agency.

8. Reasonable Accommodation for Applicants / Employees with Disabilities: The contractor must be familiar

with the requirements for and comply with the Americans with Disabilities Act and all rules and regulations established there under. Employers must provide reasonable accommodation in all employment activities unless to do so would cause an undue hardship.

9. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment: The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall take all necessary and reasonable steps to ensure nondiscrimination in the administration of this contract.

a. The contractor shall notify all potential subcontractors and suppliers and lessors of their EEO obligations under this contract.

b. The contractor will use good faith efforts to ensure subcontractor compliance with their EEO obligations.

10. Assurance Required by 49 CFR 26.13(b):

a. The requirements of 49 CFR Part 26 and the State DOT's U.S. DOT-approved DBE program are incorporated by reference.

b. The contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the contracting agency deems appropriate.

11. Records and Reports: The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following the date of the final payment to the contractor for all contract work and shall be available at reasonable times and places for inspection by authorized representatives of the contracting agency and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number and work hours of minority and non-minority group members and women employed in each work classification on the project;

(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women; and

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minorities and women;

b. The contractors and subcontractors will submit an annual report to the contracting agency each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on [Form FHWA-1391](#). The staffing data should represent the project work force on board in all or any part of the last payroll period preceding the end of July. If on-the-job training is being required by special provision, the contractor

will be required to collect and report training data. The employment data should reflect the work force on board during all or any part of the last payroll period preceding the end of July.

III. NONSEGREGATED FACILITIES

This provision is applicable to all Federal-aid construction contracts and to all related construction subcontracts of \$10,000 or more.

The contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensure that its employees are not assigned to perform their services at any location, under the contractor's control, where the facilities are segregated. The term "facilities" includes waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, washrooms, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees. The contractor shall provide separate or single-user restrooms and necessary dressing or sleeping areas to assure privacy between sexes.

IV. DAVIS-BACON AND RELATED ACT PROVISIONS

This section is applicable to all Federal-aid construction projects exceeding \$2,000 and to all related subcontracts and lower-tier subcontracts (regardless of subcontract size). The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. Contracting agencies may elect to apply these requirements to other projects.

The following provisions are from the U.S. Department of Labor regulations in 29 CFR 5.5 "Contract provisions and related matters" with minor revisions to conform to the FHWA-1273 format and FHWA program requirements.

1. Minimum wages

a. All laborers and mechanics employed or working upon the site of the work, will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions

of paragraph 1.d. of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph 1.b. of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

b.(1) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(i) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(ii) The classification is utilized in the area by the construction industry; and

(iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(2) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(3) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. The Wage and Hour Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or

will notify the contracting officer within the 30-day period that additional time is necessary.

(4) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs 1.b.(2) or 1.b.(3) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

c. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

d. If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program. Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

2. Withholding

The contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract, or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the contracting agency may, after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

3. Payrolls and basic records

a. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-

Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

b.(1) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the contracting agency. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at <http://www.dol.gov/esa/whd/forms/wh347instr.htm> or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the contracting agency for transmission to the State DOT, the FHWA or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the contracting agency..

(2) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(i) That the payroll for the payroll period contains the information required to be provided under §5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under §5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(ii) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(3) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 3.b.(2) of this section.

(4) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

c. The contractor or subcontractor shall make the records required under paragraph 3.a. of this section available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the FHWA may, after written notice to the contractor, the contracting agency or the State DOT, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and trainees

a. Apprentices (programs of the USDOL).

Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice.

The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly

rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

b. Trainees (programs of the USDOL).

Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration.

The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration.

Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

d. Apprentices and Trainees (programs of the U.S. DOT).

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

5. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

6. Subcontracts. The contractor or subcontractor shall insert Form FHWA-1273 in any subcontracts and also require the subcontractors to include Form FHWA-1273 in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

7. Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

9. Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of eligibility.

a. By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

c. The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

The following clauses apply to any Federal-aid construction contract in an amount in excess of \$100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by 29 CFR 5.5(a) or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

1. Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

2. Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (1.) of this section, the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1.) of this section, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1.) of this section.

3. Withholding for unpaid wages and liquidated damages. The FHWA or the contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2.) of this section.

4. Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (1.) through (4.) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1.) through (4.) of this section.

VI. SUBLETTING OR ASSIGNING THE CONTRACT

This provision is applicable to all Federal-aid construction contracts on the National Highway System.

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the contracting agency. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635.116).

a. The term "perform work with its own organization" refers to workers employed or leased by the prime contractor, and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor or lower tier subcontractor, agents of the prime contractor, or any other assignees. The term may include payments for the costs of hiring leased employees from an employee leasing firm meeting all relevant Federal and State regulatory requirements. Leased employees may only be included in this term if the prime contractor meets all of the following conditions:

(1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;

(2) the prime contractor remains responsible for the quality of the work of the leased employees;

(3) the prime contractor retains all power to accept or exclude individual employees from work on the project; and

(4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid or propose on the contract as a whole and in general are to be limited to minor components of the overall contract.

2. The contract amount upon which the requirements set forth in paragraph (1) of Section VI is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the contracting agency has assured that each subcontract is

evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

5. The 30% self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements.

VII. SAFETY: ACCIDENT PREVENTION

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704).

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C.3704).

VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, Form FHWA-1022 shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined under this title or imprisoned not more than 5 years or both."

IX. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

By submission of this bid/proposal or the execution of this contract, or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any person who is or will be utilized in the performance of this contract is not prohibited from receiving an award due to a violation of Section 508 of the Clean Water Act or Section 306 of the Clean Air Act.

2. That the contractor agrees to include or cause to be included the requirements of paragraph (1) of this Section X in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements.

X. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, consultant contracts or any other covered transaction requiring FHWA approval or that is estimated to cost \$25,000 or more – as defined in 2 CFR Parts 180 and 1200.

1. Instructions for Certification – First Tier Participants:

a. By signing and submitting this proposal, the prospective first tier participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this

covered transaction. The prospective first tier participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective first tier participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the contracting agency determined to enter into this transaction. If it is later determined that the prospective participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the contracting agency may terminate this transaction for cause of default.

d. The prospective first tier participant shall provide immediate written notice to the contracting agency to whom this proposal is submitted if any time the prospective first tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

f. The prospective first tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.

g. The prospective first tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions," provided by the department or contracting agency, entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the \$25,000 threshold.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (<https://www.epls.gov/>), which is compiled by the General Services Administration.

i. Nothing contained in the foregoing shall be construed to require the establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of the prospective participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph (f) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

* * * * *

2. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – First Tier Participants:

a. The prospective first tier participant certifies to the best of its knowledge and belief, that it and its principals:

(1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency;

(2) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (a)(2) of this certification; and

(4) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

2. Instructions for Certification - Lower Tier Participants:

(Applicable to all subcontracts, purchase orders and other lower tier transactions requiring prior FHWA approval or estimated to cost \$25,000 or more - 2 CFR Parts 180 and 1200)

a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which

this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the \$25,000 threshold.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (<https://www.epls.gov/>), which is compiled by the General Services Administration.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the

department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

* * * * *

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Participants:

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency.

2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

* * * * *

XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts which exceed \$100,000 (49 CFR 20).

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

3. The prospective participant also agrees by submitting its bid or proposal that the participant shall require that the language of this certification be included in all lower tier subcontracts, which exceed \$100,000 and that all such recipients shall certify and disclose accordingly.

**ATTACHMENT A - EMPLOYMENT AND MATERIALS
PREFERENCE FOR APPALACHIAN DEVELOPMENT
HIGHWAY SYSTEM OR APPALACHIAN LOCAL ACCESS
ROAD CONTRACTS**

This provision is applicable to all Federal-aid projects funded under the Appalachian Regional Development Act of 1965.

1. During the performance of this contract, the contractor undertaking to do work which is, or reasonably may be, done as on-site work, shall give preference to qualified persons who regularly reside in the labor area as designated by the DOL wherein the contract work is situated, or the subregion, or the Appalachian counties of the State wherein the contract work is situated, except:

a. To the extent that qualified persons regularly residing in the area are not available.

b. For the reasonable needs of the contractor to employ supervisory or specially experienced personnel necessary to assure an efficient execution of the contract work.

c. For the obligation of the contractor to offer employment to present or former employees as the result of a lawful collective bargaining contract, provided that the number of nonresident persons employed under this subparagraph (1c) shall not exceed 20 percent of the total number of employees employed by the contractor on the contract work, except as provided in subparagraph (4) below.

2. The contractor shall place a job order with the State Employment Service indicating (a) the classifications of the laborers, mechanics and other employees required to perform the contract work, (b) the number of employees required in each classification, (c) the date on which the participant estimates such employees will be required, and (d) any other pertinent information required by the State Employment Service to complete the job order form. The job order may be placed with the State Employment Service in writing or by telephone. If during the course of the contract work, the information submitted by the contractor in the original job order is substantially modified, the participant shall promptly notify the State Employment Service.

3. The contractor shall give full consideration to all qualified job applicants referred to him by the State Employment Service. The contractor is not required to grant employment to any job applicants who, in his opinion, are not qualified to perform the classification of work required.

4. If, within one week following the placing of a job order by the contractor with the State Employment Service, the State Employment Service is unable to refer any qualified job applicants to the contractor, or less than the number requested, the State Employment Service will forward a certificate to the contractor indicating the unavailability of applicants. Such certificate shall be made a part of the contractor's permanent project records. Upon receipt of this certificate, the contractor may employ persons who do not normally reside in the labor area to fill positions covered by the certificate, notwithstanding the provisions of subparagraph (1c) above.

5. The provisions of 23 CFR 633.207(e) allow the contracting agency to provide a contractual preference for the use of mineral resource materials native to the Appalachian region.

6. The contractor shall include the provisions of Sections 1 through 4 of this Attachment A in every subcontract for work which is, or reasonably may be, done as on-site work.

**KENTUCKY TRANSPORTATION CABINET
DEPARTMENT OF HIGHWAYS**

**EMPLOYMENT REQUIREMENTS
RELATING TO
NONDISCRIMINATION OF EMPLOYEES
(APPLICABLE TO FEDERAL-AID SYSTEM CONTRACTS)**

**AN ACT OF THE KENTUCKY GENERAL ASSEMBLY
TO PREVENT DISCRIMINATION IN EMPLOYMENT**

**KRS CHAPTER 344
EFFECTIVE JUNE 16, 1972**

The contract on this project, in accordance with KRS Chapter 344, provides that during the performance of this contract, the contractor agrees as follows:

1. The contractor shall not fail or refuse to hire, or shall not discharge any individual, or otherwise discriminate against an individual with respect to his compensation, terms, conditions, or privileges of employment, because of such individual's race, color, religion, national origin, sex, disability or age (forty and above); or limit, segregate, or classify his employees in any way which would deprive or tend to deprive an individual of employment opportunities or otherwise adversely affect his status as an employee, because of such individual's race, color, religion, national origin, sex, disability or age forty (40) and over. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

2. The contractor shall not print or publish or cause to be printed or published a notice or advertisement relating to employment by such an employer or membership in or any classification or referral for employment by the employment agency, indicating any preference, limitation, specification, or discrimination, based on race, color, religion, national origin, sex, or age forty (40) and over, or because the person is a qualified individual with a disability, except that such a notice or advertisement may indicate a preference, limitation, or specification based on religion, national origin, sex, or age forty (40) and over, or because the person is a qualified individual with a disability, when religion, national origin, sex, or age forty (40) and over, or because the person is a qualified individual with a disability, is a bona fide occupational qualification for employment.

3. If the contractor is in control of apprenticeship or other training or retraining, including on-the-job training programs, he shall not discriminate against an individual because of his race, color, religion, national origin, sex, disability or age forty (40) and over, in admission to, or employment in any program established to provide apprenticeship or other training.

4. The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representative of the contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment. The contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for non-compliance.

Revised: January 25, 2017

Standard Title VI/Non-Discrimination Assurances

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees as follows:

1. **Compliance with Regulations:** The contractor (hereinafter includes consultants) will comply with the Acts and the Regulations relative to Non-discrimination in Federally-assisted programs of the U.S. Department of Transportation, **Federal Highway Administration**, as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.
2. **Non-discrimination:** The contractor, with regard to the work performed by it during the contract, will not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor will not participate directly or indirectly in the discrimination prohibited by the Acts and the Regulations, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR Part 21.
3. **Solicitations for Subcontracts, Including Procurements of Materials and Equipment:** In all solicitations, either by competitive bidding, or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier will be notified by the contractor of the contractor's obligations under this contract and the Acts and the Regulations relative to Non-discrimination on the grounds of race, color, or national origin.
4. **Information and Reports:** The contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Recipient or the **Federal Highway Administration** to be pertinent to ascertain compliance with such Acts, Regulations, and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish the information, the contractor will so certify to the Recipient or the **Federal Highway Administration**, as appropriate, and will set forth what efforts it has made to obtain the information.
5. **Sanctions for Noncompliance:** In the event of a contractor's noncompliance with the Non-discrimination provisions of this contract, the Recipient will impose such contract sanctions as it or the **Federal Highway Administration** may determine to be appropriate, including, but not limited to:
 - a. withholding payments to the contractor under the contract until the contractor complies; and/or
 - b. cancelling, terminating, or suspending a contract, in whole or in part.
6. **Incorporation of Provisions:** The contractor will include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations and directives issued pursuant thereto. The contractor will take action with respect to any subcontract or procurement as the Recipient or the **Federal Highway Administration** may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, the contractor may request the Recipient to enter into any litigation to protect the interests of the Recipient. In addition, the contractor may request the United States to enter into the litigation to protect the interests of the United States.

Standard Title VI/Non-Discrimination Statutes and Authorities

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the “contractor”) agrees to comply with the following non-discrimination statutes and authorities; including but not limited to:

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d *et seq.*, 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin); and 49 CFR Part 21;
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 U.S.C. § 4601), (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- Federal-Aid Highway Act of 1973, (23 U.S.C. § 324 *et seq.*), (prohibits discrimination on the basis of sex);
- Section 504 of the Rehabilitation Act of 1973, (29 U.S.C. § 794 *et seq.*), as amended, (prohibits discrimination on the basis of disability); and 49 CFR Part 27;
- The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 *et seq.*), (prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982, (49 USC § 471, Section 47123), as amended, (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987, (PL 100-209), (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms “programs or activities” to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);
- Titles II and III of the Americans with Disabilities Act, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131 -- 12189) as implemented by Department of Transportation regulations at 49 C.F.R. parts 37 and 38;
- The Federal Aviation Administration’s Non-discrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures non-discrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;
- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);
- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S.C. 1681 *et seq.*)

EXECUTIVE BRANCH CODE OF ETHICS

In the 1992 regular legislative session, the General Assembly passed and Governor Brereton Jones signed Senate Bill 63 (codified as KRS 11A), the Executive Branch Code of Ethics, which states, in part:

KRS 11A.040 (7) provides:

No present or former public servant shall, within six (6) months following termination of his office or employment, accept employment, compensation, or other economic benefit from any person or business that contracts or does business with, or is regulated by, the state in matters in which he was directly involved during the last thirty-six (36) months of his tenure. This provision shall not prohibit an individual from returning to the same business, firm, occupation, or profession in which he was involved prior to taking office or beginning his term of employment, or for which he received, prior to his state employment, a professional degree or license, provided that, for a period of six (6) months, he personally refrains from working on any matter in which he was directly involved during the last thirty-six (36) months of his tenure in state government. This subsection shall not prohibit the performance of ministerial functions, including but not limited to filing tax returns, filing applications for permits or licenses, or filing incorporation papers, nor shall it prohibit the former officer or public servant from receiving public funds disbursed through entitlement programs.

KRS 11A.040 (9) states:

A former public servant shall not represent a person or business before a state agency in a matter in which the former public servant was directly involved during the last thirty-six (36) months of his tenure, for a period of one (1) year after the latter of:

- a) The date of leaving office or termination of employment; or
- b) The date the term of office expires to which the public servant was elected.

This law is intended to promote public confidence in the integrity of state government and to declare as public policy the idea that state employees should view their work as a public trust and not as a way to obtain private benefits.

If you have worked for the executive branch of state government within the past six months, you may be subject to the law's prohibitions. The law's applicability may be different if you hold elected office or are contemplating representation of another before a state agency.

Also, if you are affiliated with a firm which does business with the state and which employs former state executive-branch employees, you should be aware that the law may apply to them.

In case of doubt, the law permits you to request an advisory opinion from the Executive Branch Ethics Commission, 3 Fountain Place, Frankfort, Kentucky 40601; telephone (502) 564-7954.

Revised: January 27, 2017

PROJECT WAGE RATES / FEDERAL FUNDED

The contractor shall use the Davis-Bacon Act Wage Determinations for Highway construction that are effective 10 calendar days prior to the letting date. The project wage determinations can be found at the following link.

https://beta.sam.gov/search?index=wd&date_filter_index=0&date_rad_selection=date&wdType=dbra&construction_type=Highway&state=KY&page=1

The Division of Construction Procurement will post the official Wage Determinations for each Letting at <https://transportation.ky.gov/Construction-Procurement/Pages> under Lettings - Proposal Information - Wage Determinations.

Fringe benefit amounts are applicable for all hours worked except when otherwise noted.

No laborer, workman or mechanic shall be paid at a rate less than that of a Journeyman except those classified as bona fide apprentices.

Apprentices or trainees shall be permitted to work as such subject to Administrative Regulations adopted by the Commissioner of Workplace Standards. Copies of these regulations will be furnished upon request from any interested person.

Before using apprentices on the job the contractor shall present to the Contracting Officer written evidence of registration of such employees in a program of a State apprenticeship and training agency approved and recognized by the U. S. Bureau of Apprenticeship and Training. In the absence of such a State agency, the contractor shall submit evidence of approval and registration by the U. S. Bureau of Apprenticeship and Training.

The contractor shall submit to the Contracting Officer, written evidence of the established apprenticeship-journeyman ratios and wage rates in the project area, which will be the basis for establishing such ratios and rates for the project under the applicable contract provisions.

TO: EMPLOYERS/EMPLOYEES

PREVAILING WAGE SCHEDULE:

The wages indicated on this wage schedule are the least permitted to be paid for the occupations indicated. When an employee works in more than one classification, the employer must record the number of hours worked in each classification at the prescribed hourly base rate.

OVERTIME:

Overtime is to be paid to an employee at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty (40) hours in such workweek. Wage violations or questions should be directed to the designated Engineer or the undersigned.

Director
Division of Construction Procurement
Frankfort, Kentucky 40622
502-564-3500

**NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION
TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY
(Executive Order 11246)**

1. The Offeror's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Specifications" set forth herein.
2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate work force in each trade on all construction work in the covered area, are as follows:

GOALS FOR MINORITY PARTICIPATION IN EACH TRADE	GOALS FOR FEMALE PARTICIPATION IN EACH TRADE
5.2%	6.9%

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally-assisted) performed in the covered area. If the contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the contractor also is subject to the goals for both its federally involved and non-federally involved construction.

The Contractor's compliance with the Executive Order and the regulations in CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4, 3(a), and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within ten (10) working days of award of any construction subcontract in excess of \$10,000.00 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address and telephone number of the subcontractor; employer identification number of the subcontractor; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the subcontract is to be performed. The notification shall be mailed to:

**Evelyn Teague, Regional Director
Office of Federal Contract Compliance Programs
61 Forsyth Street, SW, Suite 7B75
Atlanta, Georgia 30303-8609**

4. As used in this Notice, and in the contract resulting from this solicitation, the "**covered area**" is Marshall County.

PART IV
INSURANCE

Refer to
Kentucky Standard Specifications for Road and Bridge Construction,
current edition

PART V
BID ITEMS

PROPOSAL BID ITEMS

Report Date 9/19/19

Section: 0001 - PAVING

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0010	00003		CRUSHED STONE BASE	3,087.00	TON		\$	
0020	00020		TRAFFIC BOUND BASE	500.00	TON		\$	
0030	00078		CRUSHED AGGREGATE SIZE NO 2	1,500.00	TON		\$	
0040	00190		LEVELING & WEDGING PG64-22	200.00	TON		\$	
0050	00214		CL3 ASPH BASE 1.00D PG64-22	1,397.00	TON		\$	
0060	00225		CL3 ASPH BASE 0.75D PG76-22	4,299.00	TON		\$	
0070	00326		CL3 ASPH SURF 0.50B PG76-22	2,579.00	TON		\$	
0080	00356		ASPHALT MATERIAL FOR TACK	28.00	TON		\$	
0090	02101		CEM CONC ENT PAVEMENT-8 IN	1,742.00	SQYD		\$	
0100	02599		FABRIC-GEOTEXTILE TYPE IV	4,000.00	SQYD		\$	
0110	02676		MOBILIZATION FOR MILL & TEXT	1.00	LS		\$	
0120	02677		ASPHALT PAVE MILLING & TEXTURING	4,111.00	TON		\$	
0130	20071EC		JOINT ADHESIVE	10,000.00	LF		\$	
0140	22861EN		HIGH STRENGTH GEOTEXTILE FABRIC TY V	7,786.00	SQYD		\$	
0150	24785EC		FIBER REINFORCEMENT FOR HMA	8,275.00	TON		\$	

Section: 0002 - ROADWAY

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0160	01810		STANDARD CURB AND GUTTER	2,615.00	LF		\$	
0170	02014		BARRICADE-TYPE III	15.00	EACH		\$	
0180	02159		TEMP DITCH	922.00	LF		\$	
0190	02160		CLEAN TEMP DITCH	461.00	LF		\$	
0200	02200		ROADWAY EXCAVATION	4,514.00	CUYD		\$	
0210	02242		WATER	10.00	MGAL		\$	
0220	02545		CLEARING AND GRUBBING 0.8 ACRES	1.00	LS		\$	
0230	02562		TEMPORARY SIGNS	1,000.00	SQFT		\$	
0240	02575		DITCHING AND SHOULDERING	8,316.00	LF		\$	
0250	02650		MAINTAIN & CONTROL TRAFFIC	1.00	LS		\$	
0260	02671		PORTABLE CHANGEABLE MESSAGE SIGN	8.00	EACH		\$	
0270	02701		TEMP SILT FENCE	922.00	LF		\$	
0280	02703		SILT TRAP TYPE A	4.00	EACH		\$	
0290	02704		SILT TRAP TYPE B	4.00	EACH		\$	
0300	02705		SILT TRAP TYPE C	4.00	EACH		\$	
0310	02706		CLEAN SILT TRAP TYPE A	4.00	EACH		\$	
0320	02707		CLEAN SILT TRAP TYPE B	4.00	EACH		\$	
0330	02708		CLEAN SILT TRAP TYPE C	4.00	EACH		\$	
0340	02720		SIDEWALK-4 IN CONCRETE	1,120.00	SQYD		\$	
0350	02721		REMOVE CONCRETE SIDEWALK	99.00	SQYD		\$	
0360	02726		STAKING	1.00	LS		\$	
0370	02775		ARROW PANEL	2.00	EACH		\$	
0380	04953		TEMP RELOCATION OF SIGNAL HEAD	2.00	EACH		\$	
0390	05952		TEMP MULCH	7,462.00	SQYD		\$	
0400	05953		TEMP SEEDING AND PROTECTION	5,596.00	SQYD		\$	
0410	05963		INITIAL FERTILIZER	1.30	TON		\$	

PROPOSAL BID ITEMS

Report Date 9/19/19

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0420	05964		MAINTENANCE FERTILIZER	.70	TON		\$	
0430	05990		SODDING	1,400.00	SQYD		\$	
0440	05992		AGRICULTURAL LIMESTONE	7.10	TON		\$	
0450	06510		PAVE STRIPING-TEMP PAINT-4 IN	18,872.00	LF		\$	
0460	06549		PAVE STRIPING-TEMP REM TAPE-B	900.00	LF		\$	
0470	06551		PAVE STRIPING-TEMP REM TAPE-Y	1,500.00	LF		\$	
0480	06566		PAVE MARKING-THERMO X-WALK-12 IN	1,227.00	LF		\$	
0490	06568		PAVE MARKING-THERMO STOP BAR-24IN	532.00	LF		\$	
0500	06573		PAVE MARKING-THERMO STR ARROW	4.00	EACH		\$	
0510	06575		PAVE MARKING-THERMO COMB ARROW	36.00	EACH		\$	
0520	06600		REMOVE PAVEMENT MARKER TYPE V	104.00	EACH		\$	
0530	10020NS		FUEL ADJUSTMENT	12,908.00	DOLL	\$1.00	\$	\$12,908.00
0540	10030NS		ASPHALT ADJUSTMENT	32,422.00	DOLL	\$1.00	\$	\$32,422.00
0550	23158ES505		DETECTABLE WARNINGS	888.00	SQFT		\$	
0560	24489EC		INLAID PAVEMENT MARKER	104.00	EACH		\$	
0570	24781EC		INTELLIGENT COMPACTION FOR ASPHALT	8,475.00	TON		\$	
0580	24891EC		PAVE MOUNT INFRARED TEMP EQUIPMENT	619,902.00	SF		\$	
0590	24986EC		HMA ELECTRONIC DELIVERY MGMT SYSTEM	1.00	L S		\$	
0600	24995EC		PAVE STRIPING-SPRAY THERMO-6 IN W	5,247.00	LF		\$	
0610	40032		EROSION CONTROL BLANKET	11,192.00	SQYD		\$	

Section: 0003 - DRAINAGE

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0620	00522		STORM SEWER PIPE-18 IN	1,727.00	LF		\$	
0630	00524		STORM SEWER PIPE-24 IN	588.00	LF		\$	
0640	01000		PERFORATED PIPE-4 IN	1,000.00	LF		\$	
0650	01010		NON-PERFORATED PIPE-4 IN	250.00	LF		\$	
0660	01456		CURB BOX INLET TYPE A	14.00	EACH		\$	
0670	01740		CORED HOLE DRAINAGE BOX CON-4 IN	14.00	EACH		\$	
0680	02600		FABRIC GEOTEXTILE TY IV FOR PIPE	2,704.00	SQYD	\$2.00	\$	\$5,408.00

Section: 0004 - SEWER

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0690	15067		S FORCE MAIN POINT RELOCATE	2.00	EACH		\$	
0700	15086		S LATERAL CLEANOUT	3.00	EACH		\$	
0710	15088		S LATERAL LONG SIDE 06 INCH	6.00	EACH		\$	
0720	15090		S LATERAL SHORT SIDE 06 INCH	6.00	EACH		\$	
0730	15094		S MANHOLE ADJUST TO GRADE	13.00	EACH		\$	
0740	15095		S MANHOLE CASTING STANDARD	9.00	EACH		\$	
0750	15097		S MANHOLE RECONSTRUCT INVERT	9.00	EACH		\$	
0760	15136		S LATERAL LOCATE	19.00	EACH		\$	
0770	15139		S MANHOLE REHABILITATION	26.00	EACH		\$	

PROPOSAL BID ITEMS

Report Date 9/19/19

Section: 0005 - SIGNALIZATION

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0780	04792		CONDUIT-1 IN	90.00	LF		\$	
0790	04811		ELECTRICAL JUNCTION BOX TYPE B	1.00	EACH		\$	
0800	04820		TRENCHING AND BACKFILLING	200.00	LF		\$	
0810	04830		LOOP WIRE	3,400.00	LF		\$	
0820	04844		CABLE-NO. 14/5C	2,950.00	LF		\$	
0830	04850		CABLE-NO. 14/1 PAIR	1,270.00	LF		\$	
0840	04884		ANCHOR	2.00	EACH		\$	
0850	04885		MESSENGER-10800 LB	640.00	LF		\$	
0860	04895		LOOP SAW SLOT AND FILL	1,330.00	LF		\$	
0870	04932		INSTALL STEEL STRAIN POLE	9.00	EACH		\$	
0880	04960		REMOVE AND REPLACE SIDEWALK	15.00	SQYD		\$	
0890	06472		INSTALL SPAN MOUNTED SIGN	9.00	EACH		\$	
0892	20188NS835		INSTALL LED SIGNAL-3 SECTION (ADDED: 9-12-19)	12.00	EACH		\$	
0894	20390NS835		INSTALL COORDINATING UNIT (ADDED: 9-12-19)	3.00	EACH		\$	
0900	20093NS835		INSTALL PEDESTRIAN HEAD-LED	18.00	EACH		\$	
0910	20094ES835		TEMP RELOCATION OF SIGNAL HEAD	28.00	EACH		\$	
0912	21743NN		INSTALL PEDESTRIAN DETECTOR (ADDED: 9-12-19)	18.00	EACH		\$	
0914	23157EN		TRAFFIC SIGNAL POLE BASE (ADDED: 9-12-19)	41.00	CUYD		\$	
0915	23222EC		INSTALL SIGNAL PEDESTAL (ADDED: 9-12-19)	2.00	EACH		\$	
0917	24900EC		PVC CONDUIT-1 1/4 IN-SCHEDULE 80 (ADDED: 9-12-19)	120.00	LF		\$	
0918	24901EC		PVC CONDUIT-2 IN-SCHEDULE 80 (ADDED: 9-12-19)	140.00	LF		\$	
0919	24908EC		INSTALL SIGNAL CONTROLLER-TY ATC (ADDED: 9-12-19)	2.00	EACH		\$	
0920	24955ED		REMOVE SIGNAL EQUIPMENT	3.00	EACH		\$	
0925	24963ED		LOOP TEST (ADDED: 9-12-19)	2.00	EACH		\$	

Section: 0006 - WATERLINE

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0930	14003		W CAP EXISTING MAIN	6.00	EACH		\$	
0940	14009		W ENCASMENT STEEL BORED RANGE 4	45.00	LF		\$	
0950	14014		W ENCASMENT STEEL OPEN CUT RANGE 3	90.00	LF		\$	
0960	14019		W FIRE HYDRANT ASSEMBLY	4.00	EACH		\$	
0970	14021		W FIRE HYDRANT REMOVE	2.00	EACH		\$	
0980	14027		W METER 2 INCH	1.00	EACH		\$	
0990	14028		W METER 3/4 INCH	13.00	EACH		\$	
1000	14036		W PIPE DUCTILE IRON 06 INCH	120.00	LF		\$	
1010	14037		W PIPE DUCTILE IRON 08 INCH	125.00	LF		\$	
1020	14060		W PIPE PVC 08 INCH	1,515.00	LF		\$	
1030	14077		W SERV PE/PLST LONG SIDE 1 IN (REVISED: 9-19-19)	5.00	EACH		\$	

PROPOSAL BID ITEMS

Report Date 9/19/19

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1040	14079		W SERV PE/PLST LONG SIDE 2 IN (REVISED: 9-19-19)	2.00	EACH		\$	
1050	14085		W SERV PE/PLST SHORT SIDE 3/4 IN (REVISED: 9-19-19)	9.00	EACH		\$	
1060	14086		W SERVICE SPECIAL	3.00	EACH		\$	
1070	14089		W TAPPING SLEEVE AND VALVE SIZE 1	5.00	EACH		\$	
1080	14090		W TAPPING SLEEVE AND VALVE SIZE 2	2.00	EACH		\$	
1090	14106		W VALVE 08 INCH	9.00	EACH		\$	
1100	14156		W METER REMOVE	14.00	EACH		\$	

Section: 0007 - MOBILIZATION AND/OR DEMOBILIZATION

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1110	02568		MOBILIZATION	1.00	LS		\$	
1120	02569		DEMOBILIZATION	1.00	LS		\$	